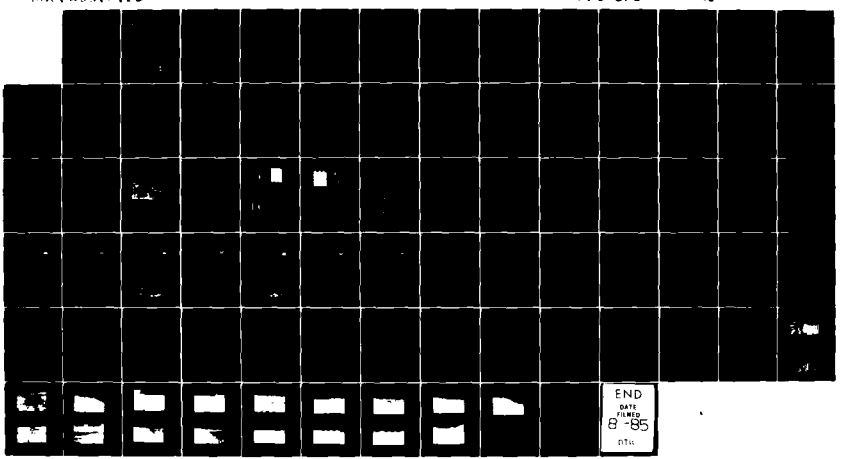
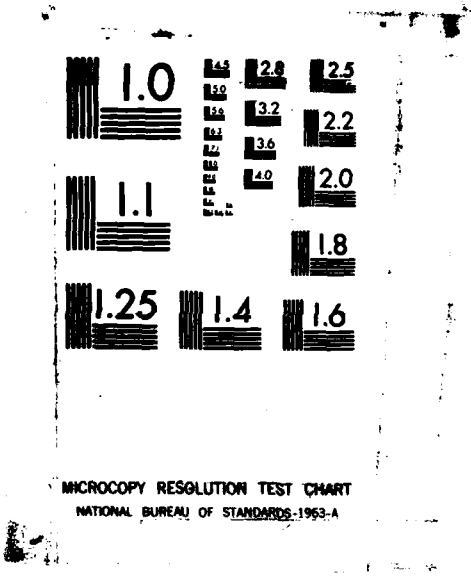
AD A155 262 ANALYSIS OF ENVIRONMENTAL TERRAIN DATA(U) 1/1
BATTELLE-INSTITUT E V FRANKFURT AM MAIN (GERMANY F R)
P JESSL ET AL. DEC 83 BLEV-R-85.308-1 DAJA45-82-C-0004
UNCLASSIFIED F/G 8/2 NL




1.0
1.1
1.25
1.4
1.6
2.0
2.2
2.5
1.8
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

(6) Report

Battelle
Battelle-Institut e.V. Frankfurt

DAJA 45-82-C-0004

Analysis of Environmental Terrain Data

BeV-R-65.308-1

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO. / 3. RECIPIENT'S CATALOG NUMBER
4. TITLE *(and Subtitle)*: Analysis of Environmental Terrain Data	5. TYPE OF REPORT & PERIOD COVERED: Final Technical Report Aug 82 - Dec 83
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Peter Jessl and Werner Koppel	8. CONTRACT OR GRANT NUMBER(s): DAJA45-83-C-0004
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Battelle-Institute e. V. Am Romerhof 35 Frankfurt am Main, West Germany	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 61102A-IT161102-BH57-01
11. CONTROLLING OFFICE NAME AND ADDRESS: USARDSG-UK PO Box 65 FPO NY 09510	12. REPORT DATE: Dec 83
	13. NUMBER OF PAGES: 67
14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*	15. SECURITY CLASS. *(of this report)*: Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Mine detection; terrain analysis; land use; cultivation practices; terrain date; crop type; mine/countermine.

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report described the procedure of mapping crop/vegetation data for two selected flight line areas (Darmstadt, Fulda) in the FRG. Mapping was based on the analysis of aerial photographs taken from 300' and 600' flight heights and on the ground truth data sampling. In addition, interviews were conducted both with farmers in the areas of interest and with agricultural researchers. Meteorological data were collected on a statistical basis to evaluate the land use and surface conditions existing during the September 1982 terrain/

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE S/N 0102-LF-014-6601

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

data sampling period.

INSTRUCTIONS FOR PREPARATION OF REPORT DOCUMENTATION PAGE

RESPONSIBILITY. The controlling DoD office will be responsible for completion of the Report Documentation Page, DD Form 1473, in all technical reports prepared by or for DoD organizations.

CLASSIFICATION. Since this Report Documentation Page, DD Form 1473, is used in preparing announcements, bibliographies, and data banks, it should be unclassified if possible. If a classification is required, identify the classified items on the page by the appropriate symbol.

COMPLETION GUIDE

General. Make Blocks 1, 4, 5, 6, 7, 11, 13, 15, and 16 agree with the corresponding information on the report cover. Leave Blocks 2 and 3 blank.

Block 1. Report Number. Enter the unique alphanumeric report number shown on the cover.

Block 2. Government Accession No. Leave Blank. This space is for use by the Defense Documentation Center.

Block 3. Recipient's Catalog Number. Leave blank. This space is for the use of the report recipient to assist in future retrieval of the document.

Block 4. Title and Subtitle. Enter the title in all capital letters exactly as it appears on the publication. Titles should be unclassified whenever possible. Write out the English equivalent for Greek letters and mathematical symbols in the title *(see "Abstracting Scientific and Technical Reports of Defense-sponsored RDT/E," AD-667 000)*. If the report has a subtitle, this subtitle should follow the main title, be separated by a comma or semicolon if appropriate, and be initially capitalized. If a publication has a title in a foreign language, translate the title into English and follow the English translation with the title in the original language. Make every effort to simplify the title before publication.

Block 5. Type of Report and Period Covered. Indicate here whether report is interim, final, etc., and, if applicable, inclusive dates of period covered, such as the life of a contract covered in a final contractor report.

Block 6. Performing Organization Report Number. Only numbers other than the official report number shown in Block 1, such as series numbers for in-house reports or a contractor/grantee number assigned by him, will be placed in this space. If no such numbers are used, leave this space blank.

Block 7. Author*(s)*. Include corresponding information from the report cover. Give the name*(s)* of the author*(s)* in conventional order *(for example, John R. Doe or, if author prefers, J. Robert Doe)*. In addition, list the affiliation of an author if it differs from that of the performing organization.

Block 8. Contract or Grant Number*(s)*. For a contractor or grantee report, enter the complete contract or grant number*(s)* under which the work reported was accomplished. Leave blank in in-house reports.

Block 9. Performing Organization Name and Address. For in-house reports enter the name and address, including office symbol, of the performing activity. For contractor or grantee reports enter the name and address of the contractor or grantee who prepared the report and identify the appropriate corporate division, school, laboratory, etc., of the author. List city, state, and ZIP Code.

Block 10. Program Element, Project, Task Area, and Work Unit Numbers. Enter here the number code from the applicable Department of Defense form, such as the DD Form 1498, "Research and Technology Work Unit Summary" or the DD Form 1634, "Research and Development Planning Summary," which identifies the program element, project, task area, and work unit or equivalent under which the work was authorized.

Block 11. Controlling Office Name and Address. Enter the full, official name and address, including office symbol, of the controlling office. *(Equates to funding/sponsoring agency. For definition see DoD Directive 5200.20, "Distribution Statements on Technical Documents.")*

Block 12. Report Date. Enter here the day, month, and year or month and year as shown on the cover.

Block 13. Number of Pages. Enter the total number of pages.

Block 14. Monitoring Agency Name and Address *(if different from Controlling Office)*. For use when the controlling or funding office does not directly administer a project, contract, or grant, but delegates the administrative responsibility to another organization.

Blocks 15 & 15a. Security Classification of the Report: Declassification/Downgrading Schedule of the Report. Enter in 15 the highest classification of the report. If appropriate, enter in 15a the declassification/downgrading schedule of the report, using the abbreviations for declassification/downgrading schedules listed in paragraph 4-207 of DoD 5200.1-R.

Block 16. Distribution Statement of the Report. Insert here the applicable distribution statement of the report from DoD Directive 5200.20, "Distribution Statements on Technical Documents."

Block 17. Distribution Statement *(of the abstract entered in Block 20, if different from the distribution statement of the report)*. Insert here the applicable distribution statement of the abstract from DoD Directive 5200.20, "Distribution Statements on Technical Documents."

Block 18. Supplementary Notes. Enter information not included elsewhere but useful, such as: Prepared in cooperation with . . . Translation of *(or by)* . . . Presented at conference of . . . To be published in . . .

Block 19. Key Words. Select terms or short phrases that identify the principal subjects covered in the report, and are sufficiently specific and precise to be used as index entries for cataloging, conforming to standard terminology. The DoD "Thesaurus of Engineering and Scientific Terms" *(TEST)*, AD-672 000, can be helpful.

Block 20. Abstract. The abstract should be a brief *(not to exceed 200 words)* factual summary of the most significant information contained in the report. If possible, the abstract of a classified report should be unclassified and the abstract to an unclassified report should consist of publicly- releasable information. If the report contains a significant bibliography or literature survey, mention it here. For information on preparing abstracts see "Abstracting Scientific and Technical Reports of Defense-Sponsored RDT&E," AD-667 000.

★ U.S. GPO: 1974—540-047/9052

ANALYSIS OF
ENVIRONMENTAL TERRAIN DATA

Final Technical Report

by

P. Jessl

W. Köppel

December 1983

United States Army

EUROPEAN RESEARCH OFFICE OF THE U.S. ARMY

London, England

Contract Number: DAJA 45-82-C-0004

Battelle-Institut e.V., Frankfurt am Main,

Federal Republic of Germany

C O N T E N T S

	Page
FOREWORD	1
ABSTRACT	2
INTRODUCTION	3
Background	3
Purpose and Scope	3
MAPPING PROCEDURE	4
Surface and Vegetation Data	4
Crop and Surface Conditions	4
Interpretation of Photographs	5
Ground Truth Data	9
CROP TYPES AND CLASSIFICATION	11
Structure of German Crop Types	11
Growth, Planting and Harvesting Practices.....	11
Description of Common Crop Types	12
Soil Cultivation	14
CONCLUSIONS AND RECOMMENDATIONS	17
Conclusions	17
Recommendations	17
LITERATURE CITED	18
FIGURES 1 to 12	
TABLES 1 to 10	
PHOTOGRAPHS 1 to 19	
APPENDICES A to B	

List of Figures

Fig. 1	Precipitation Map of Germany (Average Annual Rainfall 1891-1930 in mm)
Fig. 2	Sugar Beet (wedge-shaped)
Fig. 3	Turnip (barrel-shaped)
Fig. 4	Wheat
Fig. 5	Rye
Fig. 6	Barley
Fig. 7	Oat
Fig. 8	Rape
Fig. 9	Lucerne
Fig. 10	Clover (Red Clover, Swedish Clover)
Fig. 11	Lupine
Fig. 12	German Grasses

List of Tables

Table 1	Meteorological Data (Temperature, Precipitation, Sunshine etc.) for the April-September 1982 Period in the Two Flight Line Areas
Table 2a	General Land-Use Classification for the Darmstadt Area (Including Crop Types A and B, Height, and Crop Condition Classes)
Table 2b	General Land-Use Classification for the Fulda Area (Including Crop Type A and B, Height, and Crop Condition Classes)
Table 3	Crop Type A Classification
Table 4	Crop Type B Classification
Table 5	Crop/Vegetation Height
Table 6	Crop/Vegetation Condition
Table 7	Growth Heights of the Most Important Plants in Germany
Table 8	Classification of Agricultural Areas for the Groß-Gerau and Fulda Districts
Table 9	Structure of the Agriculturally Used Areas in Germany
Table 10	Planting and Harvesting Dates for the Most Important Plants in Germany

List of Photographs

Photograph 1	Typical Corn Field Along Field Trail
Photograph 2	Barrel-shaped Turnip (Typical Growth Above Ground Level)
Photograph 3	Sugar Beet Field (Row-arranged) with Turnip Edges (Non-row-arranged)
Photograph 4	Rape Field
Photograph 5	Soil-Cultivation at Various Stages (Upper Right: Plow-harrowed area; Left: Plowed Area; Centre: Harrowing with Farm Implement)
Photograph 6	Rotary-plowed Field (On the Left)
Photograph 7	Plow-harrowed Field (After Burning of Stubbles)
Photograph 8	Plow-harrowed Field
Photograph 9	Plowed (On the Left) and Harrowed Soil Condition
Photograph 10	Plow-harrowed Soil (On the Right) with Neighbouring Sugar Beet Field (On the Left)
Photograph 11	Plow-harrowed Soil Next to Potatoe and Sugar Beet Fields
Photograph 12	Plow-harrowed Soil (Extremely Hard Surface Condition)
Photograph 13	Plow-harrowed Soil
Photograph 14	Plow-harrowed Soil
Photograph 15	Stubble Field (Left: Plow-harrowed After Burning; Centre: Condition Prior to Burning; Right: Condition After Burning)
Photograph 16	Rotary-plowed Soil
Photograph 17	Shallow-plowed Soil (Left) with Neighbouring Sugar Beet Field
Photograph 18	Rape Field
Photograph 19	Sugar Beet Field with Turnip Edge (Right-hand Border)

List of Appendices[+)]

Appendix A: Darmstadt Maps

Appendix B: Fulda Maps

[+)] Appendices A-B were forwarded to WES on 24th August 1983

FOREWORD

The study reported herein was conducted by Battelle-Institut e.V. (BIeV), Frankfurt am Main, FRG, on behalf of the USAE Waterways Experiment Station, CE, Vicksburg, Miss. (WES), under a contract from the U.S. Army European Research Office, London. Administrative support for conducting this study was given by the German Federal Ministry of Defense (MOD), Rü III 5. The study is aimed at providing environmental data support (land-use, crop/vegetation types and heights, meteorological data) to the WES Mine/Countermine Research Program.

Personnel participating in the ground truth sampling included P. Jessl and W. Köppel, Vehicle Technology Department (BIeV). Photo interpretation and terrain map preparation were the responsibilities of P. Jessl and U. Liebe. The report was written by P. Jessl and W. Köppel; W. Köppel was the principal investigator.

ABSTRACT

This report describes the procedure of mapping crop/vegetation data for two selected flight line areas (Darmstadt, Fulda) in the ~~FRG~~ Federal Republic of Germany. Mapping was based on the analysis of aerial photographs taken from 300' and 600' flight heights and on ground truth data sampling. In addition, interviews were conducted both with farmers in the areas of interest and with agricultural researchers. Meteorological data were collected on a statistical basis to evaluate the land-use and surface conditions existing during the September 1982 terrain data sampling by ~~WES~~ the U.S. Army Engineer Waterways Experiment Station.

Keywords:

Terrain data
Crop type
Land use
Mine/countermine program

INTRODUCTION

Background

An extensive data acquisition effort was completed by the U.S. Army Engineer Waterways Experiment Station (WES) in September 1982 in two areas of Germany as part of the WES Mine/Countermine Research Program. This effort included multispectral imagery, aerial photography, temperature measurements and a limited amount of site characterization. BIeV was asked to classify the terrain by mapping the crop types, vegetation heights, crop conditions, etc., during the field data acquisition. Thus, site characterization by means of ground truth and aerial photographs will permit further analysis of mine detection concepts using multispectral imagery.

Purpose and Scope

The purpose of the study is to provide terrain data (land-use, crop types, crop heights, vegetation heights, meteorological data) within two specified flight line areas (Darmstadt, Fulda) based on a two-phase program. The second phase is intended to cover a generalization of Central European land-use characteristics in relation to the two above flight line areas.

Analysis of terrain data in Phase 1 finally yields terrain factor maps prepared on the basis of the interpretation of WES photographs, site visits, interviews with farmers and a survey of prevailing agricultural practices in Germany (see /1/).

MAPPING PROCEDURE

Surface and Vegetation Data

In order to generate terrain factor maps on crop/vegetation types, crop/vegetation heights and crop/vegetation conditions, some basic assumptions on the classification of terrain factors were made. Details of these assumptions will be given below. In a first step, a very detailed land-use classification was made in order to distinguish between all apparently different patches of the flight line areas. Later on, the land-use was divided into 24 classes (crop type A) in a second step, and into 11 classes (crop type B) in a third step. Heights and conditions were classed into seven and four categories, respectively. Both heights and conditions were classified according to the prevailing meteorological conditions, the local land-use practices as well as the actual information from aerial photography.

Crop and Surface Conditions

The various conditions of crop/vegetation were classified for the study on the basis of (a) the weather conditions within the flight line areas during the field activities and especially prior to them, (b) the agricultural site conditions (soil type, drainage condition, local land-use practices, etc.), (c) general growth practices, and of course (d) the actual aerial photographs. Details on the various classes chosen are given later.

The weather conditions prior to the WES field tests can be characterized as follows:

The 1982 summer season was characterized by higher-than-average temperatures and lower-than-average precipitation for most of the country including the two test site areas (Table 1). During August and September precipitation in the Fulda area was just

20 % of the long-term average values, while Darmstadt had about 65 %. The temperatures in Fulda were 1.8 to 2.9°C higher than usual, while Darmstadt figured a 0.2 to 2.2°C temperature increase.

Generally, the September conditions were too hot, too dry and accompanied by an extremely long total sunshine period (122 % of the 10-year average for the Darmstadt area and 138 % for the Fulda area). Table 1 shows the comprehensive climatic data recorded by the Darmstadt and Bad Hersfeld weather stations from April to September 1982.

The dry 1982 summer season badly influenced the yield of all truck crops. Turnips, sugar beets and potatoes showed poor results while cereals had extremely good conditions; corn in the Darmstadt area yielded poor results because of infestation with lice. The beef-raising crops' condition suffered considerably, with generally reduced growth heights especially at the second cut in September.

Fig. 1 shows a precipitation map of Germany depicting long-range average values.

Interpretation of Photographs

Mapping of crop types, crop heights and conditions was based on aerial photographs taken at 300' and 600' flight heights by a WES contractor. The flight line areas at Darmstadt and Fulda had a length of approximately 3.0 and 3.5 km, respectively, and a width of 150 m. 39 photographs taken at 600' flight height from the Darmstadt flight line and 63 photographs from Fulda were available, while 75 and 82 photographs, respectively, were evaluated which had been taken at 300' flight height.

It was agreed to map two flight line overlays on the scale of approximately 1:2,500 from the 600' imagery, while providing continuous overlays for the 300' imagery (scale ≈ 1:500) as a data base for more detailed information.

In a first step, the photographs were trimmed in such a way that they could be arranged next to each other, making up a continuous flight line.

After that, photograph number/contour maps were prepared in order to allow quick comparison between position and number of a specific photograph in the flight line.

This arrangement of the imagery facilitated a comprehensive understanding of the land-use characteristics in the two areas.

Then, the actual factor maps were established sequentually in the following order:

a) Land-use basic information
b) Crop type A
c) Crop type B
d) Crop/vegetation height
e) Crop/vegetation condition

Land-use Basic Information Map

This map indicates all patches which are apparently different in land use, colour, texture, etc., irrespective of the origin of these differences. The patches were consecutively numbered in south-north direction. Patches with identical land-use characteristics but not neighbouring each other were given different patch numbers. A total of 140 patches were identified in each of the two flight line areas of Darmstadt and Fulda (see Tables 2a and 2b). Mapping was effected first on the 1:500

scale overlays[+)], being transferred into the 1:2,500 scale flight line map later.

Crop_Type_A_Maps

In a second step, a crop type A map was generated featuring various cultivating differences and cutting stages in a very detailed order. This was done for establishing a specific crop type data base and yielded about 24 classes of crop types (see Table 3). It is understood as a working map only, whereas the following crop type B maps are to be used as basic descriptors of the terrain factor "crop type".

Crop_Type_B_Maps

In these maps, the 24 above classes have been lumped down to 11 classes (see Table 4), taking into account various similarities of cultivated areas and greenland. For example, plowing, harrowing and surface chopping of soils has been summarized as "cultivated", e.g. map code 001. Because of their different characteristics in growth and appearance, truck crops such as turnips, potatoes and sugar beets on the other hand, are separately mapped.

Crop/Vegetation_Height_Maps

These maps were established basically by referring to the seasonal growth height development of German plants (see Table 7) and to height characteristics of German tree species (see

+) These overlays were submitted to WES on 24th August 1983

/2/). This classification considers local changes in crop conditions if these have a major effect on height growth (see Tables 5 and 6).

Crop/Vegetation Condition Maps

The condition maps reflect three site conditions (Table 6) for vegetation and crops which are due to site factors such as drainage, soil quality, climate etc. It was felt that a classification according to poor, normal and good condition satisfactorily characteristizes the main crop properties.

Generally, the photo-interpretation process involved both qualitative and quantitative understanding of

- German crop types, plants, tree species and
- prevailing land-use practices

in connection with the meteorological conditions.

Identification of crop types was quite unambiguous, with a few exceptions: because of the extremely hot and dry summer conditions of 1982, the growth of meadows, pastures and green fodder was adversely affected, and most of the patches were heavily withered up. These patches thus took on a brown-yellowish colour similar to that of dry cultivated (harrowed, chopped) soils and stubble fields. Under normal conditions, a dark-green appearance of the green fodder patches would have been expected during that season. Another aerial photograph identification problem arose from the similarity between turnips and sugar beets. As their height growth does not exhibit major differences and their leaves are very similar, too, there are hardly any reliable means of distinguishing these truck crops by aerial photograph data only. Thus, the differences in their shape and projection above ground level have to be identified in order to characterize the different crops. Turnips are in

general barrel-shaped and grow approximately 90 % above ground level, while sugar beets are wedge-shaped and grow just 10 % above ground level (see Figs. 2 and 3). An aid in the interpretation of aerial photographs was the agricultural practice of planting small turnip strips along the edges of sugar-beet fields in order to facilitate harvesting: if these turnip patches are harvested earlier manually, farm equipment can be moved without damaging neighbouring crops.

In general, the height identification of crops and trees did not cause severe problems. Classification of heights was performed on the basis of the agricultural growth height development (Table 7) and of the prevailing seasonal/meteorological characteristics and the height development of German tree species /2/.

Both crop types and heights were reclassified whenever ground truth acquisition and interviews with farmers yielded results contradictory to the maps.

Ground Truth Data

From May 3 to 5, 1983 ground truth data were collected and interviews with farmers held within both flight line areas Darmstadt and Fulda. In addition, agricultural researchers were questioned about the land-use mapping achieved from the imagery; possible sources of problems were identified (turnips/sugar beets, meadows/cultivated fields) and mapping was finally established.

A total of six farmers were interviewed in the two areas (three in each area); on the basis of these interviews, the following basic statements can be made:

- All beef-raising crops (pastures, meadows, rape, etc.) had poor results due to the hot and dry summer season.

- Truck crops (turnips, sugar beets) had poor conditions.

- Cereals found extremely good conditions in both areas.

- The predominant crop types for the flight line and neighbouring areas were estimated as follows:

  -- Darmstadt

  Cereals (barley 80 %, wheat 20 %); truck crops (sugar beets dominating over turnips); corn.
  Green fodder.

  -- Fulda

  Mixed cereals prevailing (oat, barley, rye); truck crops (turnips, potatoes).
  Meadows/pastures.

  • Beef-raising crops were roughly classified as yielding only 50 % compared to normal conditions.

  • The yield of corn crops in the Fulda area depends critically on the local drainage conditions; thus, the heights may vary between 150 cm and 210 cm.

CROP TYPES AND CLASSIFICATION

Structure of German Crop Types

Agricultural areas in Germany are classified statistically down to the district level every two years according to the percentage values of land use. This analysis for the two districts of interest - Burghaun and Geinsheim - which are included in the flight line areas, is shown in Table 8. Regarding the districts of Groß-Gerau and Fulda as a data base, cereals are predominating within the Darmstadt area while green fodder and meadows/pastures prevail in the Fulda area.

Growth, Planting and Harvesting Practices

On the basis of the general structure of the German agricultural areas (Table 9), growth heights and planting periods can be identified as given in Tables 7 and 10.

Cereals, corn and rape usually reach average heights of 20 to 120 cm from May to August. Corn, however, may grow up to 200 cm from August to October if it is kept as a grain crop for beef-raising purposes. Sugar beets, potatoes and other green fodder types grow about 10 to 30 cm high during the May to October/ November period. Meadows and pastures usually reach heights of 10 cm from September to May, whil heights of 40 to 50 cm are occasionally reached between May and August.

Soils are normally plowed immediately after harvesting. Here, we have to distinguish between plowing, milling and chopping of the soil. Plowing turns the soil up to a depth of 35 cm. By milling or chopping, the stubbles of cereals are generally mixed with the soil down to a depth of 10 cm. Later on, plowing is performed again after approximately four weeks.

Farmers are anxious to ensure that the plowed soils are loosened by frost. Only after very wet fall periods - when plowing is not possible - plowing is done in March/April.

The exact plowing date is determined according to the crops to be planted. In the case of truck crops, plowing is generally done in fall (November). Green fodder is predominantly farmed directly after cropping winter barley or early potatoes. Thus, plowing is done three weeks before planting (i.e. early July) (see Table 10).

Immediately before planting, the plowed soil is broken down and reworked to a depth of 5 cm.

Cereals generally grow on all types of soil; wheat and barley are more fastidious than rye and oat. Thus, rye and oat are predominating on sandy (i.e. poor) soils and in more elevated locations (above 500 m altitude, i.e. in the Fulda area). Sugar beets and rape are mainly cultivated on silty and clayey soils, while potatoes prefer sandy soils; corn has no preference at all.

Description of Common Crop Types

The crop types met most frequently in agricultural areas are briefly described in the following summary, which is backed up by various agricultural drawings (Figs. 4 to 12 and Photographs 1 to 20).

Corn

Corn, which reaches growth heights of up to 200 cm (see Table 7 and Photograph 1), is exclusively used for beef-raising purposes.

Turnips

Turnips, which are barrel-shaped and normally grow up to 90 % above ground level (see Fig. 3 and Photograph 2), are used as beef-raising food.

Sugar beets

Sugar beets have a leave shape similar to that of turnips and can only be distinguished from those by their wedge shape and their 10 % growth above ground level (see Fig. 2 and Photograph 3).

Wheat

Wheat is the most important cereal in Germany; it demands good site conditions, avoiding extreme climatic areas. The fruit shape is shown in Fig. 4.

Rye

Rye constitutes a very resistant cereal which accepts also rather unfavourable climatic conditions. It is usually met in the northern areas of Germany (see. Fig. 5).

Barley

Barley is frequently found in river depressions such as the Rhine valley (Darmstadt flight line area), i.e. low-precipitation areas with base-rich soils (Fig. 6).

Oat

Oat is the least important German cereal; it is met predominantly in the Central Highlands and in the north-east. Oat does not need favourable climatic and soil conditions (Fig. 7).

Green fodder

This term normally summarizes all kinds of beef-raising fodder such as rape, lucerne, clover, grasses, lupine, etc., which

are discussed below. Secondly, green fodder is used for the so-called "green dung" procedure (enrichment of the soil with organics after plowing the green fodder into the soil mass).

- Rape
  Rape is used for both beef raising and vegetable-oil production. Rape has recently regained some importance as green fodder plant (Fig. 8 and Photograph 4).

- Lucerne
  Lucerne constitutes the most important green fodder in the central and southern dry areas of the country (Fig. 9).

- Clover
  These fulfil a major roll together with grasses, guaranteeing a balanced organic soil household (Fig. 10). They contribute essentially to the green dung procedure.

- Lupine
  Lupine is predominantly met on the sandy soils in the north. This beef-raising crop also contributes remarkably to the green dung procedure (Fig. 11).

- Grasses
  One of the most important beef-raising crops are pure and mixed grass crops (e.g. grass-clover mix). Usually, fine-grained soils provide favourable growth conditions (Fig. 12).

Soil Cultivation

"Soil cultivation" can be broken down into the following basic procedures:

- plowing (depth approx. 35 cm) (see Photograph 5, left-hand portion)

- harrowing (see Photograph 5, center)
- chopping/milling

The soil cultivation procedure for stubble fields (harvested grain crops), however, has to be regarded separately. Farmers make use of the natural manure effects of the stubbles as outlined below.

As to the crop type classification of agricultural areas, "soil cultivation" needs some care to be defined for stubble fields in terms of cultivation depth and related farm implements. Cultivated stubble fields which are defined as class 20 in the crop type A class system (or as class 001 in the crop type B class system) can be generated in basically three ways, the general procedure of cultivation being defined as "chopping/milling". The three procedures are:

(1) "Plow harrowing":

Hook-shaped fixed lances penetrate into the stubble field soil to a depth of approximately 4 to 6" (Photographs 7, 8, 9, 10, 11, 12, 13, 14, 15). This is the most commonly applied stubble field cultivation procedure.

(2) "Chopping" by means of a rotary plow:

Rotating knives penetrate into the stubble field soil down to approximately 3 to 5" depth (Photographs 6+) and 16).

(3) "Shallow plowing":

Cutting of the stubble field soil in terms of shallow plowing down to approximately 5" depth (Photograph 17).

+) This photograph shows the result of chopping of a stubble field. The chopping procedure applied to other fields is identical.

In some cases, farmers are burning down the stubbles before cultivating the soil (Photograph 7; next to the orchard, stubbles were not burnt). Photographs 4 and 18 show rape growing on the stubble field being used to build up the "green dung" procedure; here, the soil will be enriched with organics later when the green fodder is plowed into the soil mass.

Photographs 13 and 19 show turnips and sugar beets; turnips, approximately 90 % of whose length is above ground level (see Photograph 2) are not arranged in rows.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

On the basis of the proposed classifications and mapping of land-use characteristics in two flight line areas, it is concluded that the crop conditions were different for cereals and truck crops due to the prevailing climatic conditions prior to the establishment of the imagery. The growth history of various agricultural crops and their dependence on meteorological conditions can be sufficiently predicted for environmental support purposes. Thus, a generalization of land-use practices for large-scale European land-use conditions can be derived from existing results of the two test areas. As the thematic maps and extensive statistics required for such a task are available, all necessary data conditions are met.

Recommendations

The results of this study should be used as an input for generalization of crop types and conditions for Central European land-use characteristics. Large-scale imagery (e.g. satellite photographs), various thematic maps and well-defined regionalization of Germany/Central Europe will generate the desired results for a limited number of defined land-use terrain factors. A supplementary classification of major geographic regions in Germany, even down to the district level, can be made on the basis of agricultural crop distribution and land use, which are taken from thematic maps and statistical sources. Thus, it will be possible to identify the likely distribution of land-use and the extent of continuous crop coverage for high cross-country mobility areas within specific regions. To quantify similarity between the two sets of data, the land-use characteristics of the two flight line areas have to be compared with the prevailing German land-use conditions.

LITERATURE CITED

/1/ Handbook of Agriculture and Farming
(Lehrbuch des Acker- und Pflanzenbaus), by Prof. E. Klapp,
1967; Edition by Paul Barey; Berlin/Hamburg

/2/ P. Jessl, W. Köppel:
Investigation into a Methodology of Establishing an Areal
Terrain-Data Base, Phase III, 1979
Battelle Report DAJA 37-79-C-0242 for ERO London

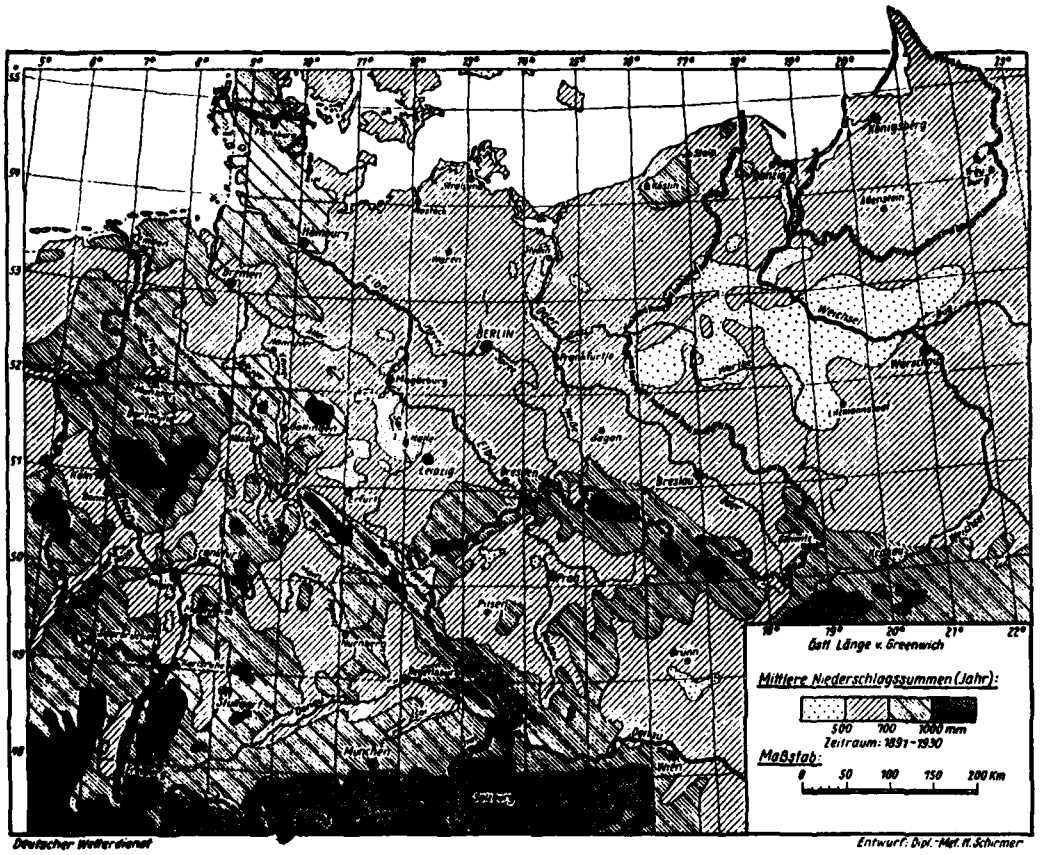


Fig. 1: Precipitation Map of Germany (Average Annual Rainfall 1891-1930 in mm)

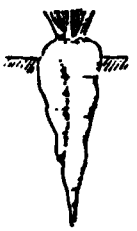


Fig. 2: Sugar Beet (wedge-shaped)

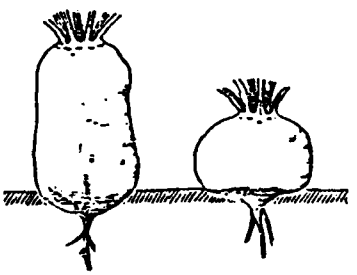


Fig. 3: Turnip (barrel-shaped)

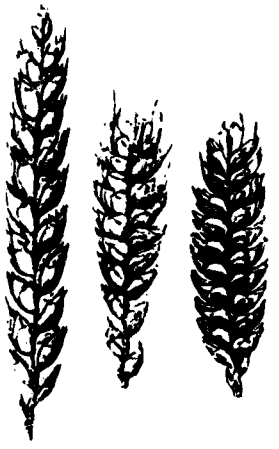


Fig. 4: Wheat

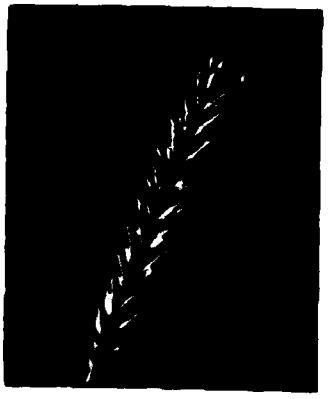


Fig. 5: Rye

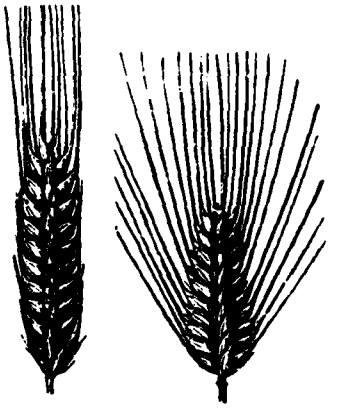


Fig. 6: Barley

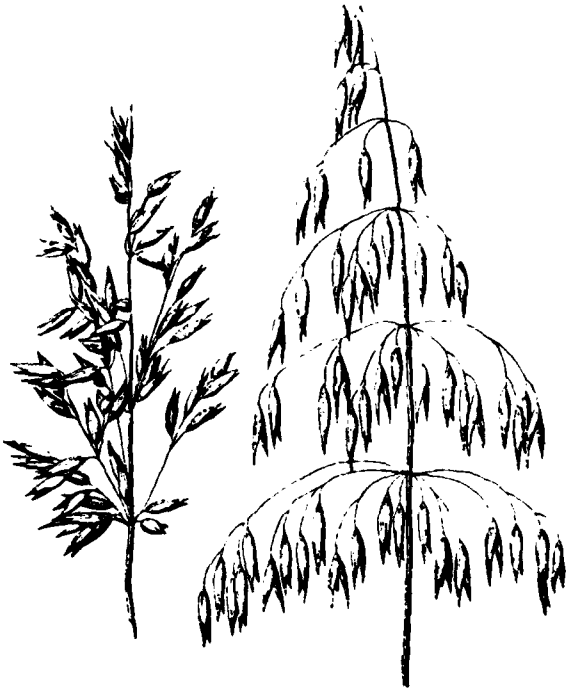


Fig. 7: Oat

Fig. 8: Rape

Fig. 9: Lucerne

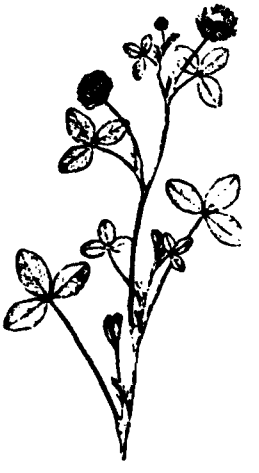


Fig. 10: Clover (Red Clover, Swedish Clover)

Fig. 11: Lupine

Fig. 12: German Grasses

Table 1: Meteorological Data (Temperature, Precipitation, Sunshine etc.) for the April-September 1982 Period in the Two Flight Line Areas

Klimatologische Werte für April 1982

Station	Höhe über NN m	Kennziffer	Luftdruck auf NN reduziert mbar	Lufttemperatur Mittel °C	Abweichung	Höchster Wert °C	am	Tiefster Wert °C	am	Sommertage	Heiße Tage	Frosttage	Eistage	Rel. Feuchte %	Niederschlag mm	%	Höchst. Wert mm	am	Tage mit ≥ 0,1 mm	≥ 1,0 mm	Schneefall	Schneedecke	Sonnenschein Std.	%	Bewölkung Heitere Tage	Trübe Tage	Gewittertage	Wind Windtage ≥ 6	Sturmtage ≥ 8
Helgoland	4	015	17.2	6.0	-0.2	11.4	6.	0.4	9.	.	.	.	.	83	31	79	7	8.	12	8	4	.	231	117	5	5	1	10	2
List auf Sylt	26	020	15.8	5.9	-0.5	14.7	2.	-0.9	8.	.	.	2	.	81	29	66	7	28.	13	7	7	.	247	122	4	4	.	17	5
Schwesing	28	026	16.3	6.0	-0.2	18.4	6.	-3.2	14.	.	.	9	.	78	28	60	7	7.	16	9	6	.	210		2	3	1	4	.
Schleswig	43	035	16.0	6.5	0.0	15.8	6.	-2.4	5.	.	.	6	.	74	39	72	9	7.	12	11	5	1	218	114	2	3	.	4	.
Kiel-Kronshagen	17	045	15.9	6.7	-0.2	19.2	6.	-2.2	1.	.	.	7	.	72	37	85	11	7.	12	9	5	1	249	125	4	2	.	.	.
Norderney	11	113	17.8	6.4	-0.8	17.8	5.	1.6	9.	.	.	.	.	83	31	75	7	6.	12	8	5	.	227	117	6	4	.	13	4
Bremerhaven	7	129	17.4	7.4	-0.3	19.4	6.	0.9	1.	.	.	.	.	81	32	65	7	7.	11	8	5	.	194	104	6	2	3	12	2
Cuxhaven	5	131	17.2	6.8	-0.6	18.2	6.	0.3	9.	.	.	.	.	80	32	67	7	7.	12	8	5	.	207	107	5	6	.	12	2
Hamburg (Flugh.)	13	147	16.7	7.3	-0.2	20.7	6.	-2.5	14.	.	.	7	.	72	48	92	11	7.	11	10	6	.	202	109	2	4	.	3	.
Lübeck	8	156	16.8	7.5	-0.2	18.5	2.	-0.6	1.	.	.	2	.	67	33	69	12	7.	12	5	5	.	215	110	5	5	.	2	.
Emden-Nesserland	6	203	17.9	7.3	-0.5	19.8	6.	0.6	1.	.	.	.	.	73	34	74	7	6.	11	8	5	.	222	115	4	5	1	3	.
Bremen (Flugh.)	4	224	17.1	7.1	-1.1	21.8	6.	-4.1	15.	.	.	6	.	78	31	61	5	29.	12	11	6	.	192	104	2	4	1	6	.
Soltau	77	235	17.1	7.8	-0.7	22.2	6.	-2.1	14.	.	.	7	.	76	60	114	10	7.	15	11	7	3	193	103	2	11	1	.	.
Lüchow	17	253	16.4	7.2	-0.8	22.2	6.	-2.4	1.	.	.	7	.	71	32	80	6	29.	14	9	5	.	221	113	4	9	.	1	.
Lingen	21	305	18.4	7.7	-0.8	21.4	6.	-1.5	14.	.	.	1	.	70	37	71	8	6.	12	9	5	.	199	119	2	4	1	.	.
Münster	60	313	17.2	8.0	-0.6	21.4	6.	-1.2	14.	.	.	2	.	66	28	53	6	10.	11	10	5	.	200	107	2	5	.	4	.
Osnabrück	95	317	18.6	7.5	-0.8	21.9	6.	-1.3	14.	.	.	2	.	68	46	82	7	7.	14	9	5	1	185	109	5	5	.	.	.
Bad Salzuflen	98	325	17.5	7.7	-0.8	22.0	6.	-2.2	14.	.	.	2	.	71	43	76	7	29.	16	12	8	2	186	107	4	7	.	.	.
Hannover (Flugh.)	53	338	17.6	7.3	-0.8	21.8	6.	-2.3	14.	.	.	6	.	74	43	89	10	23.	14	10	7	.	185	101	3	8	1	2	.
Braunschweig-V.	81	348	17.0	7.5	-0.8	21.7	6.	-1.7	15.	.	.	4	.	68	33	73	8	23.	14	8	6	.	190	101	4	7	1	3	.
Berlin-Dahlem	51	381	16.1	7.7	-1.0	21.5	6.	-2.3	14.	.	.	3	.	62	22	53	5	29.	11	8	7	.	199	103	6	3	2	1	.
Berlin-Temp.(Flugh.)	48	384	16.0	8.0	-1.0	21.5	6.	-1.4	14.	.	.	2	.	60	26	66	5	29.	11	8	7	.	204		7	3	3	3	.
Bocholt-Liedern	21	406	18.8	7.8	-0.7	21.6	5.	-2.2	14.	.	.	5	.	72	23	46	4	8.	12	8	3	1	219	115	5	5	.	2	.
Essen-Bredeney	154	410	18.8	8.1	-0.8	21.2	5.	-0.8	12.	.	.	4	.	67	36	55	6	7.	13	10	7	.	176	102	4	6	2	.	.
Düsseldorf(Flugh.)	37	400	19.2	8.5		21.5	5.	-2.2	15.	.	.	4	.	66	24		4	6.	13	8	5	.	181		4	3	2	6	.
Kahler Asten	839	427		2.6	-1.4	14.9	6.	-4.9	12.	.	.	17	4	77	105	93	21	7.	18	15	10	17	168	105	3	13	2	13	.
Bad Lippspringe	157	430	17.7	7.1	-1.3	22.0	6.	-2.2	14.	.	.	4	.	72	58	90	10	8.	17	10	7	.	169		3	9	.	.	.
Kassel	231	438	17.7	7.2	-1.1	21.2	6.	-2.4	14.	.	.	3	.	67	50	102	17	23.	15	9	8	3	203		5	8	.	.	.
Göttingen	175	444	17.9	7.2	-1.2	22.4	6.	-2.8	14.	.	.	4	.	67	46	116	18	23.	13	7	6	1	187	104	7	8	.	.	.
Braunlage	607	452	17.2	3.9	-1.1	19.0	6.	-3.5	14.	.	.	15	.	74	86	101	14	7.	18	14	9	11	191	104	5	13	.	.	.
Aachen	202	501	19.2	7.8	-1.1	22.2	5.	-0.2	14.	.	.	1	.	69	54	85	21	7.	13	11	5	1	175	98	5	5	1	.	.
Nürburg	627	510	19.1	4.7	-1.3	18.1	5.	-3.3	9.	.	.	12	.	74	54	82	22	7.	14	12	9	6	183		2	10	2	1	.
Köln-Wahn(Flugh.)	73	513	19.0	8.0	-1.2	20.6	5.	-5.0	14.	.	.	7	.	66	55	106	16	7.	13	9	5	.	194		3	6	1	4	.
Bad Marienberg	547	526	17.7	5.1	-1.1	16.9	2.	-2.4	14.	.	.	11	.	75	93	119	25	7.	15	11	10	6	191	101	3	10	2	.	.
Gießen-Liebigsh.	186	532	18.0	7.7	-1.2	20.4	6.	-2.0	14.	.	.	2	.	68	38	100	27	7.	11	5	4	1	228	116	5	4	.	1	.
Bad Hersfeld +)	212	542	18.2	7.1	-1.0	21.2	6.	-3.2	14.	.	.	7	.	68	49	102	13	7.	14	9	6	2	200	111	3	9	.	.	.
Wasserkuppe	921	544		2.3	-1.6	14.8	6.	-8.4	9.	.	.	16	5	77	80	103	26	7.	16	13	12	10	188	109	8	12	2	14	2
Trier-Petrisberg	265	609	18.8	7.7	-1.3	22.3	5.	-1.7	14.	.	.	5	.	67	35	68	18	7.	12	7	3	.	203	108	4	5	.	2	.
Deuselbach	480	615	18.6	5.9	-1.5	19.0	5.	-3.0	14.	.	.	6	.	73	33	49	12	7.	13	9	9	.	202	104	3	6	1	7	.
Geisenheim	109	628	18.3	8.8	-1.1	20.2	6.	0.0	14.	.	.	.	.	60	38	103	13	7.	13	8	3	.	220	115	8	4	1	1	.
Kl.Feldberg/Ts.	805	635	18.7	3.5	-1.4	15.1	6.	-4.1	9.	.	.	14	3	76	77	109	23	7.	13	12	10	9	204	111	7	10	2	.	.
Frankfurt(Flugh.)	111	637	18.6	8.6	-0.8	21.0	6.	-1.6	14.	.	.	4	.	64	37	85	14	7.	12	6	3	.	212	113	8	6	1	2	.
Darmstadt ++)	108	639	18.3	8.9	-1.3	21.5	6.	-2.4	30.	.	.	4	.	61	38	89	9	2.	13	10	3	.	224	117	8	6	.	1	.
Würzburg	268	655	18.0	7.8	-1.5	21.2	6.	-1.6	14.	.	.	6	.	61	37	83	13	8.	13	8	7	.	210	107	5	6	1	3	.
Bad Kissingen	282	658	17.5	7.5	-1.1	21.9	6.	-2.5	14.	.	.	9	.	61	49	110	19	7.	13	8	6	1	189	101	7	2	1	.	.
Bamberg	239	675	17.8	7.0	-1.4	22.2	6.	-2.7	14.	.	.	10	.	65	31	78	9	8.	12	7	6	.	212	125	6	8	1	.	.
Coburg	337	671	17.6	6.7	-1.4	21.0	6.	-3.3	14.	.	.	9	.	65	56	134	15	8.	12	8	8	3	214	112	6	8	2	.	.
Hof-Hohensaas	567	685	17.4	4.4	-1.3	19.8	6.	-3.7	12.	.	.	16	.	70	39	82	11	8.	14	8	8	6	203	113	5	9	1	.	.
Weiden/Opf.	438	688	17.8	5.6	-1.8	20.6	6.	-3.5	14.	.	.	15	.	66	31	75	12	8.	11	7	6	4	187	103	5	7	.	.	.
Berus	363	704	18.6	7.6	-1.1	20.7	5.	-1.9	13.	.	.	6	.	58	22	35	5	7.	11	5	3	.	218	105	8	2	.	3	.
Saarbrücken(Flh.)	323	708	18.5	7.8	-1.1	20.2	5.	-3.0	13.	.	.	5	.	64	34	60	11	8.	11	8	3	.	221	110	7	4	.	.	.
Neustadt/Wstr.	163	723	18.3	8.8	-1.2	21.2	6.	0.1	13.	.	.	.	.	62	37	77	13	8.	10	6	1	.	215	114	5	5	.	.	.
Karlsruhe	112	727	18.4	8.8	-1.3	22.4	5.	-1.7	14.	.	.	3	.	62	28	47	6	23.	12	7	1	.	212	113	6	6	1	1	.
Mannheim	96	729	18.4	9.1	-0.9	21.7	6.	-1.5	14.	.	.	4	.	62	37	82	9	23.	14	8	2	.	214	105	5	6	1	.	.
Stuttgart(Stadt)	286	737	18.3	8.4	-1.5	21.1	5.	-0.5	14.	.	.	2	.	58	29	57	8	23.	10	5	5	.	206	117	6	8	.	.	.
Stuttg. (Flugh.)	373	738	18.0	7.3	-1.5	21.1	6.	-2.2	14.	.	.	8	.	60	34	69	10	23.	10	5	8	1			6	6	.	2	.
Öhringen	276	742	17.7	7.3	-1.8	20.5	5.	-1.9	14.	.	.	3	.	64	45	80	14	8.	13	8	5	.	218	114	7	6	1	.	.
Weißenburg/Bay.	422	761	17.6	6.1	-1.7	21.7	6.	-5.3	14.	.	.	17	.	65	28	66	8	29.	15	6	8	2	206	108	3	8	.	1	.
Nürnberg(Flugh.)	310	763	17.8	6.8	-1.4	21.4	6.	-4.5	14.	.	.	13	.	69	30	75	15	8.	14	7	6	1	213	113	3	8	1	2	.
Regensburg	366	776	17.7	6.4	-1.6	22.4	6.	-2.8	14.	.	.	14	.	67	15	30	5	29.	7	4	3	1	215	119	6	10	.	.	.
Gr.Falkenstein	1307	791		-0.4	-2.5	13.0	6.	-8.1	9.	.	.	26	7	67	71		18	8.	20	13	17	30	172	102	5	9	1	2	.
Freiburg i.Br.	269	803	17.8	9.4	-0.9	20.4	5.	-0.7	14.	.	.	1	.	56	30	51	13	29.	9	6	2	.	202		2	9	.	1	.
Freudenstadt	797	815	18.3	4.1	-1.8	17.9	5.	-4.1	13.	.	.	13	.	70	77	73	35	8.	13	9	10	10	202	120	3	8	.	.	.
Klippeneck	973	818		3.8	-1.6	18.2	5.	-4.5	13.	.	.	15	.	49	32	58	9	29.	10	8	8	6	226	121	5	10	.	3	.
Stötten	734	836	18.5	4.6	-1.9	17.9	6.	-3.8	9.	.	.	13	.	67	57	77	13	29.	12	9	8	7	199	123	5	10	.	9	.
Ulm	522	838	18.0	6.2	-1.4	20.8	6.	-2.7	13.	.	.	11	.	65	20	45	5	8.	11	5	6	.	221	123	3	5	.	.	.
Augsburg-Mühlh.	461	852	17.9	6.0	-2.2	21.3	6.	-4.2	14.	.	.	15	.	66	21	44	7	29.	12	5	5	.	207	116	5	9	.	3	.
München (Flugh.)	527	866	17.7	5.8	-1.8	20.8	6.	-3.8	20.	.	.	14	.	68	33	53	7	8.	14	7	6	2	184	103	3	9	1	1	.
Mühldorf/Inn	401	875	17.3	6.6	-1.5	20.6	6.	-2.9	14.	.	.	9	.	67	25	47	7	29.	11	7	3	1	194	118	3	9	.	.	.
Passau	409	893	17.6	6.4	-1.8	20.0	6.	-3.4	14.	.	.	13	.	65	22	36	6	29.	12	6	6	1	201	112	5	9	.	.	.
Feldberg/Schw.	1486	908		-0.4	-1.8	11.9	5.	-8.3	14.	.	.	24	8	79	59	53	18	29.	13	8	13	30	187	121	3	11	3	17	4
Konstanz	443	929	17.8	7.8	-0.8	20.6	6.	0.3	13.	.	.	.	.	62	30	60	11	29.	10	6	4	1	202	113	4	9	1	.	.
Kempten	705	946	18.2	4.7	-1.6	19.0	5.	-3.2	14.	.	.	17	.	72	71	84	22	29.	16	8	9	5	187	110	5	11	.	.	.
Oberstdorf	810	948	18.5	3.6	-2.0	17.9	5.	-4.6	15.	.	.	20	.	77	71	62	21	29.	18	11	10	18	152	100	4	9	1	.	.
Zugspitze	2960	961		-9.4	-2.5	5.6	5.	-17.1	13.	.	.	30	26	86	152	90	22	29.	25	20	25	30	156	95	2	16	.	10	2
Hohenpeißenberg	977	962		3.4	-2.2	18.0	6.	-5.0	14.	.	.	12	.	71	58	69	11	29.	15	11	10	10	187	112	2	13	1	4	1
Garmisch-Partk.	719	963	18.2	4.7	-1.7	21.6	6.	-3.6	15.	.	.	19	.	77	59	78	16	8.	19	14	11	4	164	106	3	11	.	.	.
Wendelstein	1032	980		-2.7	-2.8	10.6	5.	-10.3	9.	.	.	27	20	85	130	79	17	29.	22	17	22	30	121	83	2	15	1	8	1

+) nearest weather station of the Fulda flight line   ++) nearest weather station of the Darmstadt flight line

Klimatologische Werte für Mai 1982

Station	Höhe über NN m	Kennziffer	Luftdruck auf NN reduziert mbar	Lufttemperatur Mittel °C	Abweichung	Höchster Wert °C	am	Tiefster Wert °C	am	Sommertage	Heiße Tage	Frosttage	Eistage	rel. Feuchte %	Niederschlag mm	%	Höchst. Wert mm	am	Tage mit ≥ 0,1mm	≥ 1,0mm	Schneefall	Schneedecke	Sonnenschein Std.	%	Bewölkung heitere Tage	trübe Tage	Gewittertage	Wind Tage ≥ 6 Bft	Sturmtage ≥ 8 Bft
Helgoland	4	015	18.1	10.8	-0.3	19.0	27.	2.8	2.	.	.	.	.	93	31	73	8	21.	14	9	1	.	230	94	3	7	2	5	1
List auf Sylt	26	020	17.3	10.6	-0.2	23.9	27.	2.1	2.	.	.	.	.	81	26	66	10	7.	10	7	1	.	239	95	3	12	1	9	1
Schwesing	28	026	18.1	10.6	-0.4	24.0	27.	0.8	6.	2	.	.	.	78	50	105	19	22.	14	9	.	.	225		4	8	2	2	.
Schleswig	43	035	18.0	11.1	0.1	26.5	27.	0.8	2.	1	.	.	.	76	78	139	18	18.	14	12	1	.	226	91	2	12	3	.	.
Kiel-Kronshagen	17	045	18.0	11.5	0.1	27.7	27.	-0.3	6.	2	.	1	.	74	79	165	20	18.	16	14	1	.	220	88	4	14	1	.	.
Norderney	11	113	18.1	11.1	0.1	25.8	27.	2.1	6.	2	.	.	.	80	34	80	12	21.	15	7	.	.	250	107	2	6	2	3	.
Bremerhaven	7	129	18.4	12.2	0.2	27.8	27.	1.7	10.	3	.	.	.	79	50	90	11	27.	17	10	1	.	225	98	3	8	3	6	.
Cuxhaven	5	131	18.5	11.4	-0.5	27.4	27.	2.2	2.	2	.	.	.	80	69	127	16	22.	14	12	.	.	232	97	3	8	2	4	.
Hamburg (Flugh.)	13	147	18.7	12.2	0.2	27.7	27.	-0.4	9.	2	.	2	.	75	65	119	19	18.	15	10	.	.	222	96	5	9	3	3	.
Lübeck	8	156	18.4	12.4	0.2	28.0	27.	1.4	2.	4	.	.	.	70	57	101	8	22.	16	12	1	.	225	90	6	9	2	.	.
Emden-Nesserland	6	203	17.9	12.3	0.5	27.2	16.	0.5	6.	4	.	.	.	73	40	74	7	1.	16	12	.	.	248	106	2	6	5	3	.
Bremen (Flugh.)	4	224	18.3	12.1	-0.7	27.3	16.	-2.6	9.	2	.	6	.	78	71	127	23	18.	16	12	1	.	233	101	3	9	7	2	.
Soltau	77	235	18.8	12.2	-0.2	28.3	27.	-1.1	10.	4	.	3	.	73	69	116	12	1.	15	12	1	.	220	97	4	12	5	.	.
Lüchow	17	253	18.7	12.7	-0.2	27.5	27.	-0.4	9.	4	.	1	.	72	44	89	9	22.	14	10	1	.	240	100	5	11	5	1	.
Lingen	21	305	18.6	13.2	0.2	29.0	16.	0.7	9.	5	.	.	.	68	51	94	9	27.	17	11	.	.	239	117	7	8	2	.	.
Münster	60	313	17.4	13.5	0.7	28.7	16.	1.5	6.	5	.	.	.	66	68	136	16	18.	16	12	.	.	242	107	9	7	4	2	.
Osnabrück	95	317	18.9	12.8	0.1	28.1	27.	1.1	6.	3	.	.	.	69	65	131	13	18.	17	13	2	.	240	108	9	8	3	.	.
Bad Salzuflen	98	325	18.3	13.2	0.3	29.2	27.	0.4	6.	3	.	.	.	71	73	129	14	22.	16	9	.	.	229	103	7	9	6	.	.
Hannover (Flugh.)	53	338	18.9	12.9	0.3	29.0	27.	0.2	9.	4	.	.	.	73	51	98	9	22.	16	14	1	.	239	105	5	9	3	1	.
Braunschweig-V.	81	340	18.6	13.2	0.1	27.8	27.	1.5	2.	3	.	.	.	69	50	93	8	24.	18	13	.	.	223	100	6	9	6	3	.
Berlin-Dahlem	51	381	19.1	13.7	-0.1	28.0	17.	1.3	3.	5	.	.	.	66	63	136	16	22.	13	11	1	.	250	105	6	7	6	.	.
Berlin-Temp.(Flugh.)	48	384																											
Bocholt-Liedern	21	406	18.5	13.1	0.3	27.7	27.	1.4	2.	5	.	.	.	73	60	109	8	6.	15	14	.	.	245	110	7	8	2	.	.
Essen-Bredeney	154	410	18.7	13.5	0.4	27.5	31.	1.4	2.	5	.	.	.	67	109	154	25	22.	16	12	.	.	221	104	8	9	6	.	.
Düsseldorf(Flugh.)	37	400	19.0	14.1		29.4	16.	1.1	2.	5	.	.	.	66	77		15	22.	16	12	.	.	217		8	9	5	3	.
Kahler Asten	839	427		8.8	0.2	23.7	27.	-2.8	2.	.	.	5	.	76	98	109	18	18.	20	13	3	4	196	95	6	10	6	2	.
Bad Lippspringe	157	430	18.4	12.8	0.2	28.1	27.	1.2	6.	3	.	.	.	70	75	112	12	6.	17	14	.	.	222		7	10	5	.	.
Kassel	231	438	18.7	13.0	0.4	27.0	27.	-0.2	2.	4	.	1	.	69	66	106	23	23.	16	9	2	.	221		6	9	5	1	.
Göttingen	175	444	19.2	12.9	0.0	29.0	27.	0.4	6.	4	.	.	.	69	57	101	19	23.	14	12	2	.	216	101	5	11	4	.	.
Braunlage	607	452	18.7	10.1	0.2	23.7	27.	-1.3	6.	.	.	3	.	72	66	82	22	23.	17	12	4	1	200	95	4	14	3	.	.
Aachen	202	501	18.6	13.4	0.5	28.4	26.	2.5	2.	5	.	.	.	58	124	185	43	18.	18	13	.	.	214	104	9	10	5	.	.
Nürburg	627	510	19.0	10.8	0.3	24.0	16.	-1.5	2.	.	.	2	.	70	62	87	11	18.	16	10	4	1	217		6	13	4	1	.
Köln-Wahn(Flugh.)	73	513	18.9	13.8	0.4	28.5	27.	-0.7	2.	5	.	1	.	67	79	140	23	18.	16	13	.	.	213		8	12	4	2	.
Bad Marienberg	547	526	18.2	10.8	0.4	24.1	27.	-1.3	2.	.	.	2	.	75	106	147	30	18.	14	12	3	1	209	97	7	9	5	.	.
Gießen-Liebigsh.	186	532	18.7	13.5	0.0	27.7	27.	0.3	2.	3	.	.	.	69	85	166	33	10.	13	11	.	.	231	101	6	11	3	1	.
Bad Hersfeld	212	542	19.2	13.0	0.5	28.4	27.	0.0	3.	4	.	.	.	69	82	139	29	10.	16	10	1	.	213	99	6	7	3	.	.
Wasserkuppe	921	544		8.8	0.3	22.2	27.	-3.4	2.	.	.	6	.	75	64	74	21	10.	17	10	5	3	227	104	7	9	4	10	1
Trier-Petrisberg	265	609	18.9	13.2	0.1	28.0	26.	1.8	2.	5	.	.	.	68	33	54	7	18.	13	8	.	.	240	110	8	8	5	1	.
Deuselbach	480	615	18.6	11.9	0.3	24.8	31.	0.2	2.	.	.	.	.	70	35	52	9	23.	13	9	.	.	237	101	6	8	2	4	.
Geisenheim	109	620	18.9	13.8	-0.4	27.7	27.	0.7	6.	5	.	.	.	63	61	113	22	10.	13	8	.	.	241	103	8	7	4	1	.
Kl.Feldberg/Ts.	805	635	19.4	9.5	0.1	22.1	27.	-2.5	2.	.	.	3	.	74	118	171	37	10.	15	12	3	2	219	100	6	6	4	.	.
Frankfurt(Flugh.)	111	637	19.4	13.8	0.0	28.2	27.	-1.2	3.	5	.	3	.	71	70	129	33	10.	15	8	.	.	247	108	7	10	1	1	.
Darmstadt	108	639	19.2	14.3	-0.3	28.2	27.	-0.2	6.	6	.	2	.	65	63	123	14	10.	13	10	.	.	251	103	6	9	3	1	.
Würzburg	268	655	19.2	13.5	0.0	27.9	27.	0.4	2.	3	.	.	.	67	44	79	10	6.	15	9	.	.	224	94	8	9	5	2	.
Bad Kissingen	262	658	18.9	13.0	-0.1	28.1	31.	-0.5	3.	5	.	1	.	70	58	112	23	10.	16	9	.	.	224	100	6	9	3	.	.
Bamberg	239	675	19.4	13.1	-0.1	27.7	27.	0.3	2.	5	.	.	.	71	39	64	6	10.	14	10	.	.	219	101	8	10	5	.	.
Coburg	337	671	19.3	13.0	0.1	27.8	31.	-0.5	2.	3	.	1	.	67	59	92	17	10.	16	10	.	.	229	98	8	10	3	.	.
Hof-Hohensaas	567	685	19.1	11.1	0.6	25.0	31.	-1.4	2.	1	.	4	.	72	55	90	16	5.	14	10	1	1	223	105	9	10	2	.	.
Weiden/Opf.	438	688	19.3	12.5	0.2	27.2	31.	-1.0	8.	2	.	3	.	67	32	55	7	5.	11	9	1	.	218	96	7	6	3	.	.
Berus	363	704	18.9	13.2	0.4	26.0	31.	2.0	8.	2	.	.	.	67	27	43	10	23.	10	7	.	.	258	101	10	4	2	1	.
Saarbrücken(Flh.)	323	708	19.0	13.4	0.3	26.0	31.	1.6	3.	3	.	.	.	64	36	61	10	23.	11	8	.	.	259	106	6	5	.	.	.
Neustadt/Weinstr.	163	723	19.0	14.4	0.1	27.9	16.	1.4	6.	5	.	.	.	64	54	107	14	4.	13	10	.	.	245	108	8	6	3	.	.
Karlsruhe	112	727	19.4	14.6	0.2	27.6	16.	1.0	6.	9	.	.	.	66	59	89	24	4.	14	11	.	.	252	107	7	7	4	.	.
Mannheim	96	729	19.2	14.4	-0.2	28.2	27.	-0.1	6.	7	.	1	.	69	74	135	19	6.	16	11	.	.	243	98	9	7	4	.	.
Stuttgart(Stadt)	286	737	19.3	14.3	0.1	27.8	27.	2.7	8.	5	.	.	.	61	83	112	21	20.	14	10	.	.	224	100	6	5	4	.	.
Stuttg. (Flugh.)	373	738	19.2	13.0	-0.1	27.3	27.	-1.1	11.	2	.	2	.	66	71	98	16	4.	15	10	.	.			6	8	3	2	.
Öhringen	276	742	18.8	13.3	-0.1	27.0	27.	0.6	8.	5	.	.	.	69	62	90	17	10.	14	10	.	.	239	100	10	6	2	.	.
Weißenburg/Bay.	422	761	19.0	12.8	0.6	27.0	31.	-0.2	3.	3	.	2	.	67	48	69	13	6.	12	6	1	.	234	99	7	10	4	.	.
Nürnberg(Flugh.)	310	763	19.2	13.5	0.5	28.2	31.	-0.4	8.	4	.	2	.	70	45	81	13	6.	10	5	.	.	219	95	6	10	2	.	.
Regensburg	366	776	19.3	13.3	0.4	27.6	27.	0.8	2.	4	.	.	.	69	28	48	7	28.	12	9	.	.	242	108	7	7	2	3	.
Gr.Falkenstein	1307	791		7.1	0.1	21.1	31.	-5.3	2.	.	.	6	2	65	70		16	20.	14	11	3	27	209	100	5	9	3	.	.
Freiburg i.Br.	269	803	18.8	15.6	1.0	27.3	15.	2.6	6.	8	.	.	.	56	63	83	27	4.	15	8	.	.	240		6	6	1	2	.
Freudenstadt	797	815	19.1	10.4	0.3	23.0	27.	-1.0	6.	.	.	2	.	71	101	101	33	4.	16	12	2	2	239	118	8	7	6	.	.
Klippeneck	973	818		10.0	0.2	23.0	31.	-1.5	1.	.	.	5	.	74	74	93	16	6.	18	13	3	3	254	112	8	10	5	2	.
Stötten	734	836	19.8	10.8	0.1	23.3	27.	-0.7	2.	.	.	2	.	72	88	92	22	23.	16	11	4	1	213	101	4	10	4	5	.
Ulm	522	838	19.4	12.3	0.2	26.4	27.	-1.1	8.	2	.	2	.	69	43	56	11	6.	14	10	1	.	229	104	6	8	4	.	.
Augsburg-Mühlh.	461	852	19.2	12.8	0.1	26.5	27.	-0.9	12.	4	.	1	.	68	46	56	13	6.	16	9	1	.	238	108	7	8	3	2	.
München (Flugh.)	527	866	19.3	12.6	0.4	26.2	27.	-0.8	1.	2	.	2	.	69	58	52	17	21.	14	9	1	.	250	112	9	9	4	2	.
Mühldorf/Inn	401	875	19.0	13.6	0.8	26.8	27.	-0.3	3.	6	.	1	.	69	82	102	19	28.	12	8	.	.	247	109	8	10	3	.	.
Passau	409	893	19.0	13.7	0.6	26.8	31.	0.4	3.	5	.	.	.	68	75	95	25	10.	16	8	1	.	255	115	7	9	3	.	.
Feldberg/Schw.	1486	908		5.9	0.1	18.5	26.	-5.1	1.	.	.	9	2	78	108	85	21	4.	20	12	9	25	214	110	7	9	4	15	3
Konstanz	443	929	19.3	13.5	0.3	26.7	27.	2.4	8.	4	.	.	.	68	41	52	7	6.	17	11	1	.	238	108	6	9	5	.	.
Kempten	705	946	19.6	11.0	0.2	24.5	31.	-1.7	8.	.	.	2	.	72	72	59	14	23.	15	13	2	.	225	108	8	9	4	.	.
Oberstdorf	810	948	19.7	10.4	0.2	24.2	27.	-1.9	8.	.	.	5	.	72	107	72	32	23.	14	12	3	.	216	120	7	10	3	.	.
Zugspitze	2960	961		-2.3	0.2	9.4	30.	-16.5	1.	.	.	29	14	83	111	66	23	24.	17	11	16	31	233	137	5	11	5	8	2
Hohenpeißenberg	977	962		10.6	0.8	24.1	27.	-1.9	1.	.	.	3	.	68	65	52	11	23.	15	14	2	2	237	115	7	9	5	4	.
Garmisch-Partk.	719	963	19.4	11.5	0.6	24.9	27.	-1.6	1.	.	.	3	.	74	80	62	20	23.	16	10	2	.	232	134	7	10	4	.	.
Wendelstein	1832	980		5.0	0.6	16.1	31.	-8.5	1.	.	.	13	1	77	123	57	27	23.	17	11	8	19	227	131	4	7	7	12	.

Klimatologische Werte für .... Juni 1982

Station	Höhe ü. NN m	Kennziffer	Luftdruck auf NN reduziert mbar	Lufttemperatur Mittel °C	Abweichung	Höchster Wert °C	am	Tiefster Wert °C	am	Sommertage	Heiße Tage	Frosttage	Eistage	Rel. Feuchte %	Niederschlag mm	%	Höchst-Wert mm	am	Tage mit ≥ 0,1mm	≥ 1,0mm	Schneefall	Schneedecke	Sonnenschein Std.	%	Heitere Tage	Trübe Tage	Gewittertage	Wind Tage ≥ 6 Bft	Sturmtage ≥ 8 Bft
Helgoland	4	015	13.2	14.8	1.0	26.1	4.	10.0	15.	.	.	.	.	78	51	117	11	22.	13	8	.	.	265	99	5	5	2	7	.
List auf Sylt	26	020	12.5	15.0	0.8	28.5	4.	7.8	14.	5	.	.	.	76	68	115	10	11.	11	10	.	.	236	92	2	5	2	11	1
Schwesing	28	026	12.9	15.0	0.8	29.2	5.	4.2	14.	5	.	.	.	76	76	137	27	26.	15	11	.	.	216		3	8	4	1	.
Schleswig	43	035	12.8	15.1	0.6	29.1	2.	4.8	14.	6	.	.	.	76	76	129	14	26.	14	11	.	.	208	86	3	11	4	.	.
Kiel-Kronshagen	17	045	12.8	15.6	0.6	30.8	4.	3.2	18.	6	1	.	.	71	100	172	22	26.	15	12	.	.	206	83	5	11	4	.	.
Norderney	11	113	13.4	15.3	0.9	31.0	3.	9.6	18.			.	.	78	66	119	15	22.	12	7	.	.	232	106	5	7	4	6	.
Bremerhaven	7	129	13.4	16.5	1.3	32.8	3.	8.3	18.		3	.	.	78	70	110	16	22.	15	12	.	.	210	97	4	4	7	6	.
Cuxhaven	5	131	13.3	15.8	0.7	28.0	3.	10.0	15.	5	.	.	.	76	78	110	22	29.	14	8	.	.	227	97	4	11	5	7	.
Hamburg (Flugh.)	13	147	13.3	16.2	0.9	32.3	5.	5.0	18.	6	3	.	.	74	102	159	28	27.	13	10	.	.	204	92	2	5	7	.	.
Lübeck	8	156	13.0	16.2	0.4	32.2	4.	5.7	18.	6	3	.	.	70	74	119	12	22.	16	12	.	.	206	86	5	8	4	.	.
Emden-Nesserland	6	203	13.1	16.5	1.4	32.9	4.	6.9	18.	6	3	.	.	76	111	179	21	23.	17	15	.	.	213	98	5	9	5	2	.
Bremen (Flugh.)	4	224	13.1	16.2	0.2	31.5	4.	2.9	18.	6	3	.	.	76	60	102	13	22.	17	14	.	.	214	99	3	4	8	1	.
Soltau	77	235	13.4	16.1	0.5	32.6	3.	3.0	18.	6	4	.	.	76	69	110	13	27.	17	14	.	.	190	87	2	6	6	.	.
Lüchow	17	253	13.2	16.5	0.2	33.2	5.	2.2	18.	6	4	.	.	73	65	105	14	22.	16	11	.	.	217	91	3	6	10	.	.
Lingen	21	305	13.6	17.2	1.2	31.3	4.	5.5	17.	7	4	.	.	71	78	110	13	22.	14	13	.	.	207	106	.	5	6	.	.
Münster	60	313	12.7	16.8	1.0	30.6	2.	5.0	17.	8	2	.	.	73	85	137	22	11.	16	15	.	.	204	94	3	10	10	.	.
Osnabrück	95	317	14.0	16.7	0.9	31.0	3.	6.3	17.	7	4	.	.	73	75	117	11	13.	15	13	.	.	207	98	4	12	7	.	.
Bad Salzuflen	98	325	13.2	17.0	1.2	31.7	4.	7.1	18.	8	4	.	.	73	107	162	17	27.	17	15	.	.	197	97	2	10	8	.	.
Hannover (Flugh.)	53	338	13.7	16.5	0.7	31.6	3.	4.8	18.	6	4	.	.	76	96	146	18	22.	17	13	.	.	206	96	2	6	9	1	.
Braunschweig-V.	81	348	13.5	16.5	0.4	31.6	4.	7.4	18.	6	4	.	.	73	93	145	17	26.	17	17	.	.	198	90	3	9	8	.	.
Berlin-Dahlem	51	381	13.4	17.2	0.2	33.7	5.	4.7	18.	7	4	.	.	67	36	58	12	11.	17	9	.	.	213	97	4	8	7	.	.
Berlin-Temp.(Flugh.)	48	384	13.3	17.8	0.1	33.2	5.	7.7	17.	7	5	.	.	63	41	68	9	15.	14	9	.	.	224		5	6	7	1	.
Bocholt-Liedern	21	406	13.8	16.8	1.0	30.6	5.	4.4	17.	8	3	.	.	77	62	97	13	19.	17	13	.	.	199	92	.	11	6	.	.
Essen-Bredeney	154	410	14.2	16.6	0.6	29.7	2.	6.7	15.	6	.	.	.	76	120	144	25	19.	18	17	.	.	184	90	2	10	13	.	.
Düsseldorf(Flugh.)	37	400	14.5	17.5		30.5	2.	6.2	18.	8	4	.	.	71	82		23	19.	19	16	.	.	186		.	5	16	1	.
Kahler Asten	839	427		12.0	0.6	26.3	3.	3.3	14.	2	.	.	.	83	177	159	33	8.	21	17	.	.	165	86	.	13	12	3	.
Bad Lippspringe	157	430	13.6	16.3	0.8	31.9	3.	7.2	21.	8	3	.	.	76	68	109	20	11.	16	13	.	.	198		3	12	9	.	.
Kassel	231	438	13.7	16.6	0.8	31.3	4.	7.4	18.	8	4	.	.	71	51	79	8	28.	18	13	.	.	202		4	7	5	.	.
Göttingen	175	444	14.0	16.7	0.9	32.4	4.	5.0	14.	9	4	.	.	71	55	87	11	16.	15	13	.	.	194	93	3	9	6	.	.
Braunlage	607	452	13.5	13.9	0.9	28.7	5.	2.1	18.	5	.	.	.	75	103	105	11	19.	16	14	.	.	207	98	4	12	5	.	.
Aachen	202	501	14.4	16.8	0.4	28.9	4.	6.6	15.	8	.	.	.	76	136	174	19	29.	23	19	.	.	175	88	.	7	13	.	.
Nürburg	627	510	14.7	14.2	0.7	26.7	4.	3.8	15.	5	.	.	.	76	60	66	17	22.	20	14	.	.	195		.	12	13	.	.
Köln-Wahn(Flugh.)	73	513	14.3	17.2	0.5	31.7	2.	5.7	15.	10	4	.	.	72	112	134	32	5.	17	13	.	.	179		1	10	13	.	.
Bad Marienberg	547	526	13.7	14.3	0.9	28.4	4.	5.4	15.	5	.	.	.	81	96	116	12	11.	21	17	.	.	169	86	2	13	11	.	.
Gießen-Liebigsh.	186	532	14.1	17.2	0.6	31.9	4.	7.4	15.	9	4	.	.	71	66	94	18	29.	18	14	.	.	204	93	2	13	9	.	.
Bad Hersfeld	212	542	14.1	17.0	1.2	32.5	5.	6.5	15.	8	4	.	.	71	51	65	8	26.	19	13	.	.	172	85	2	10	4	.	.
Wasserkuppe	921	544		12.6	1.0	25.7	3.	3.2	15.	4	.	.	.	78	69	83	19	11.	18	14	.	.	191	96	1	11	6	8	.
Trier-Petrisberg	265	609	14.7	16.6	0.5	30.8	2.	7.9	14.	9	1	.	.	75	94	127	14	11.	21	17	.	.	199	98	1	11	12	1	.
Deuselbach	480	615	14.4	15.1	0.4	28.6	2.	6.3	15.	8	.	.	.	78	68	92	22	7.	20	14	.	.	213	99	1	8	6	.	.
Geisenheim	109	628	14.1	18.3	1.1	32.1	4.	7.4	15.	11	3	.	.	66	30	53	9	23.	15	9	.	.	214	100	2	4	9	.	.
Kl.Feldberg/Ts.	805	635	14.8	13.2	0.7	26.6	4.	3.5	15.	3	.	.	.	79	86	91	19	8.	20	15	.	.	167	81	2	6	8	.	.
Frankfurt(Flugh.)	111	637	14.7	18.2	1.1	33.8	4.	6.5	17.	11	5	.	.	69	35	49	9	18.	17	10	.	.	227	108	1	2	9	4	.
Darmstadt	108	639	14.4	19.0	1.2	32.8	4.	8.0	15.	12	5	.	.	62	45	66	9	27.	14	11	.	.	224	99	2	4	7	1	.
Würzburg	268	655	14.4	17.6	0.9	31.0	4.	7.8	17.	10	4	.	.	68	49	68	9	6.	17	10	.	.	221	100	5	6	4	5	.
Bad Kissingen	262	638	13.9	16.9	0.6	32.1	5.	6.0	15.	11	5	.	.	71	51	70	13	11.	15	11	.	.	218	103	4	3	7	.	.
Bamberg	239	675	14.5	17.6	1.0	32.3	5.	6.3	17.	10	5	.	.	69	53	73	9	22.	17	14	.	.	227	112	3	6	6	2	.
Coburg	337	671	14.1	16.8	0.7	32.0	5.	6.6	17.	9	4	.	.	70	66	85	11	16.	17	14	.	.	223	103	2	10	6	.	.
Hof-Hohensaas	567	685	13.9	14.7	0.8	30.1	5.	3.3	18.	6	1	.	.	73	73	98	12	13.	18	15	.	.	198	98	4	9	6	.	.
Weiden/Opf.	438	688	14.2	16.4	0.8	31.6	5.	4.5	18.	9	2	.	.	66	55	72	11	12.	15	12	.	.	197	91	4	6	4	.	.
Berus	363	704	15.0	15.5	0.7	28.1	1.	7.8	14.	6	.	.	.	73	106	135	26	1.	23	17	.	.	211	93	2	5	8	2	.
Saarbrücken(Flh.)	323	708	14.9	16.7	0.7	29.6	2.	7.2	15.	8	.	.	.	72	109	153	26	28.	19	16	.	.	225	104	1	7	11	.	.
Neustadt/Wstr.	163	723	14.4	18.7	1.2	32.0	4.	9.0	14.	11	6	.	.	64	70	99	28	7.	15	10	.	.	244	120	2	8	11	.	.
Karlsruhe	112	727	15.0	18.5	0.8	32.4	2.	9.6	14.	12	4	.	.	72	136	182	30	7.	19	15	.	.	237	111	1	12	11	.	.
Mannheim	96	729	14.6	18.8	0.9	31.7	4.	9.7	20.	12	5	.	.	67	63	88	16	28.	17	14	.	.	218	98	3	6	8	.	.
Stuttgart(Stadt)	286	737	14.8	18.4	1.2	30.5	4.	9.6	14.	11	4	.	.	64	66	104	16	6.	18	16	.	.	219	110	.	11	8	.	.
Stuttg. (Flugh.)	373	738	14.6	17.2	1.0	30.1	2.	7.6	15.	11	1	.	.	71	102	106	23	6.	17	15	.	.			.	12	9	.	.
Öhringen	276	742	14.2	17.2	0.5	30.5	2.	8.5	16.	11	3	.	.	72	91	98	12	16.	14	12	.	.	235	106	3	7	10	.	.
Weißenburg/Bay.	422	761	14.2	16.9	1.5	31.1	5.	5.6	17.	12	3	.	.	67	86	102	13	6.	15	12	.	.	212	104	3	11	5	.	.
Nürnberg(Flugh.)	310	763	14.4	17.7	1.2	31.9	5.	4.2	17.	12	5	.	.	68	97	136	33	6.	15	11	.	.	234	106	3	6	7	.	.
Regensburg	366	776	14.6	17.0	0.8	30.7	6.	8.8	14.	11	5	.	.	70	81	98	18	26.	15	13	.	.	221	104	3	7	4	1	.
Gr.Falkenstein	1307	791		10.9	0.7	24.1	4.	1.6	15.	.	.	.	.	71	141		24	11.	20	14	.	.	171	91	3	12	13	3	1
Freiburg i.Br.	269	803	15.0	18.9	1.1	30.3	4.	10.2	14.	12	1	.	.	66	136	130	29	22.	18	15	.	.	209		1	10	13	2	.
Freudenstadt	797	815	14.9	14.1	0.9	26.0	2.	4.9	15.	5	.	.	.	76	195	156	26	16.	24	21	.	.	195	103	.	11	15	.	.
Klippeneck	973	818		14.0	1.0	26.0	2.	4.5	14.	2	.	.	.	77	124	108	26	22.	19	17	.	.	228	108	.	9	11	1	.
Stötten	734	836	15.2	14.8	1.0	26.7	4.	6.0	14.	5	.	.	.	75	148	129	35	18.	15	14	.	.	211	109	2	12	10	3	.
Ulm	522	838	14.8	16.6	1.3	29.5	5.	8.0	20.	8	.	.	.	71	95	94	23	16.	17	15	.	.	223	110	1	8	8	.	.
Augsburg-Mühlh.	461	852	14.7	17.1	1.0	30.0	3.	7.9	21.	12	2	.	.	68	93	87	16	16.	16	12	.	.	223	107	3	6	7	.	.
München (Flugh.)	527	866	14.2	16.7	1.3	28.8	4.	4.3	18.	9	.	.	.	70	136	109	25	18.	18	14	.	.	217	106	3	7	7	.	.
Mühldorf/Inn	401	875	14.5	17.3	1.3	28.6	4.	6.5	18.	11	.	.	.	72	154	148	22	16.	16	13	.	.	229	110	4	10	5	.	.
Passau	409	893	14.5	16.9	0.7	30.4	5.	6.9	18.	11	1	.	.	72	115	110	23	25.	18	14	.	.	222	106	3	10	6	.	.
Feldberg/Schw.	1486	908		10.0	1.0	18.6	2.	1.3	14.	.	.	.	.	86	216	132	44	22.	23	19	1	.	160	95	.	16	12	16	.
Konstanz	443	929	15.0	17.5	0.8	29.9	3.	8.5	15.	9	.	.	.	72	128	127	17	11.	20	15	.	.	210	101	2	12	14	.	.
Kempten	705	946	15.3	15.4	1.1	27.9	2.	6.8	15.	7	.	.	.	74	182	119	27	5.	23	18	.	.	198	103	1	11	9	.	.
Oberstdorf	810	948	15.9	14.4	0.8	27.1	3.	5.8	14.	6	.	.	.	77	290	141	52	26.	22	19	.	.	164	107	1	13	11	.	.
Zugspitze	2960	961		1.1	0.6	10.2	3.	-8.7	14.	.	.	17	5	90	221	116	32	13.	22	21	15	30	155	114	1	17	11	20	8
Hohenpeißenberg	977	962		14.3	1.2	26.7	4.	6.7	15.	.	.	.	.	73	179	114	38	26.	17	17	.	.	205	109	3	11	9	1	.
Garmisch-Parth.	719	963	15.6	15.1	0.9	27.5	2.	5.6	16.	7	.	.	.	78	233	136	36	26.	21	19	.	.	184	119	2	12	10	.	.
Wendelstein	1832	980		8.6	1.1	19.2	2.	-2.1	14.	.	.	2	.	82	237	80	34	26.	20	17	3	.	169	104	2	14	10	15	2
Nachtrag Mai 1982 Berlin-Temp. (Flugh.)			18.9	14.4	0.1	27.6	27.	2.3	2.	4	.	.	.	62	70	160	15	24.	13	12	1	.	258		6	7	4	3	.

Klimatologische Werte für Juli 1982

Station	Höhe über NN m	Kennziffer	Luftdruck auf NN reduziert mbar	Lufttemperatur Mittel °C	Abweichung	Höchster Wert °C	am	Tiefster Wert °C	am	Sommertage	Heiße Tage	Frosttage	Eistage	Relative Feuchte %	Niederschlag mm	%	Höchst. Wert mm	am	Tage mit ≥ 0,1 mm	≥ 1,0 mm	Hagel	Schneedecke	Sonnenschein Std.	%	Bewölkung Heitere Tage	Trübe Tage	Gewittertage	Wind ≥ 6 Bft.	≥ 8 Bft.
Helgoland	4	015	19.2	17.2	0.9	24.5	31.	13.1	7.	.	.	.	.	79	26	32	11	2.	5	5	.	.	299	130	5	3	3	5	.
List auf Sylt	26	020	18.7	17.3	0.9	28.1	31.	11.1	5.	5	.	.	.	78	31	47	10	2.	6	5	.	.	302	125	5	5	4	9	.
Schwesing	28	026	19.2	17.1	0.9	28.0	30.	8.6	19.	6	.	.	.	74	28	32	16	4.	6	6	.	.	294		6	4	4	.	.
Schleswig	43	035	18.9	17.8	1.3	28.1	15.	10.0	19.	6	.	.	.	72	22	25	17	4.	5	3	.	.	311	131	3	4	3	.	.
Kiel-Kronshagen	17	045	18.8	18.1	1.2	30.4	15.	9.6	18.	9	1	.	.	71	51	61	23	4.	5	4	.	.	325	136	11	4	2	.	.
Norderney	11	113	19.2	17.8	1.0	28.0	15.	12.7	7.	5	.	.	.	79	16	23	5	6.	7	5	.	.	246	115	9	3	3	3	.
Bremerhaven	7	129	19.1	18.9	1.8	30.2	31.	10.7	6.	8	1	.	.	75	30	32	22	27.	8	4	.	.	284	139	7	3	3	2	.
Cuxhaven	5	131	19.1	18.3	1.1	27.6	31.	12.4	8.	4	.	.	.	75	35	37	9	4.	8	6	.	.	303	137	4	4	4	2	.
Hamburg (Flugh.)	13	147	19.1	18.8	1.8	30.5	15.	8.7	6.	11	1	.	.	71	31	38	9	4.	9	9	.	.	304	139	6	2	2	.	.
Lübeck	8	156	18.8	18.9	1.2	33.0	15.	10.2	6.	14	1	.	.	68	43	51	16	15.	8	7	.	.	313	127	6	3	2	1	.
Emden-Nesserland	6	203	18.7	18.5	1.6	29.1	31.	10.5	20.	8	.	.	.	73	21	23	12	6.	8	4	.	.	271	135	7	5	2	.	.
Bremen (Flugh.)	4	224	18.6	18.8	1.4	30.2	31.	7.1	6.	11	1	.	.	73	24	26	8	2.	7	6	.	.	264	128	3	4	3	1	.
Soltau	77	235	18.7	18.9	1.8	31.4	15.	7.5	8.	14	1	.	.	68	14	16	3	16.	7	5	.	.	276	134	6	5	4	.	.
Lüchow	17	253	18.4	19.4	1.5	32.5	15.	7.3	27.	19	1	.	.	68	33	50	12	16.	8	6	.	.	316	140	5	5	4	.	.
Lingen	21	305	18.6	19.6	2.2	30.8	31.	9.6	1.	13	2	.	.	63	13	14	3	27.	10	4	.	.	255	142	7	5	1	.	.
Münster	60	313	17.2	19.8	2.4	30.2	14.	9.4	1.	13	2	.	.	65	13	15	6	2.	5	3	.	.	261	134	8	8	2	1	.
Osnabrück	95	317	18.9	19.3	2.0	29.8	31.	9.8	6.	12	.	.	.	64	16	17	6	2.	8	4	.	.	258	137	8	5	2	1	.
Bad Salzuflen	98	325	18.0	19.4	1.9	30.0	31.	9.7	1.	14	1	.	.	68	17	19	13	3.	8	1	.	.	269	145	6	8	2	.	.
Hannover (Flugh.)	53	338	18.7	19.3	1.9	30.2	15.	9.0	8.	16	2	.	.	71	27	32	15	3.	7	5	.	.	272	132	7	7	5	.	.
Braunschweig-V.	81	346	18.3	19.2	1.6	29.6	15.	9.6	6.	15	.	.	.	65	29	35	13	16.	6	4	.	.	274	132	6	4	5	.	.
Berlin-Dahlem	51	381	18.2	20.4	1.9	31.8	15.	9.5	6.	19	1	.	.	61	32	46	22	3.	6	4	.	.	312	129	9	3	3	.	.
Berlin-Temp.(Flugh.)	48	384	17.9	21.0	1.7	32.5	15.	11.5	1.	20	2	.	.	57	34	50	26	3.	6	3	.	.	323		9	4	3	1	.
Bocholt-Liedern	21	406	18.3	19.4	1.9	31.8	9.	9.1	18.	15	6	.	.	69	14	16	7	3.	5	4	.	.	259	133	5	8	2	.	.
Essen-Bredeney	154	410	18.2	19.5	2.0	30.5	9.	10.8	1.	13	2	.	.	66	23	23	12	3.	10	4	.	.	241	135	7	7	2	.	.
Düsseldorf(Flugh.)	37	400	18.5	20.2		31.6	14.	9.4	1.	16	5	.	.	66	20		9	3.	10	3	.	.	229		6	6	3	1	.
Kahler Asten	839	427		14.9	1.7	26.6	31.	6.4	5.	.	.	.	.	75	27	21	20	3.	9	3	.	.	234	129	4	7	3	1	.
Bad Lippspringe	157	430	18.0	18.7	1.6	30.4	31.	8.9	1.	13	1	.	.	71	41	51	22	15.	8	5	.	.	238		9	7	3	.	.
Kassel	231	438	17.7	19.9	2.5	31.1	15.	8.3	1.	16	1	.	.	63	15	21	12	3.	6	2	.	.	229		3	9	2	.	.
Göttingen	175	444	18.1	19.6	2.3	31.7	15.	9.2	1.	18	3	.	.	66	32	43	20	15.	5	3	.	.	249	129	5	8	2	.	.
Braunlage	607	452	17.9	16.9	2.3	27.7	15.	7.3	5.	4	.	.	.	67	33	26	17	3.	5	5	.	.	263	136	7	7	2	.	.
Aachen	202	501	18.1	19.0	1.4	32.7	9.	9.8	27.	12	2	.	.	70	37	49	10	14.	10	9	.	.	210	110	8	12	4	1	.
Nürburg	627	510	17.9	16.6	1.4	28.6	9.	8.2	5.	5	.	.	.	74	99	130	51	21.	13	7	.	.	223		5	10	6	1	.
Köln-Wahn(Flugh.)	73	513	17.9	19.9	1.7	32.0	14.	6.2	28.	17	5	.	.	66	37	50	20	3.	12	6	.	.	231		6	6	2	.	.
Bad Marienberg	547	526	17.1	17.0	1.8	26.4	14.	8.6	5.	9	.	.	.	74	62	63	26	21.	11	6	.	.	226	112	7	6	2	.	.
Gießen-Liebigsh.	186	532	17.3	20.2	2.0	30.3	14.	8.3	1.	19	4	.	.	65	16	25	9	26.	8	4	.	.	220	99	5	8	3	.	.
Bad Hersfeld	212	542	17.8	20.1	2.7	32.3	15.	7.6	1.	16	3	.	.	63	64	86	46	21.	9	4	.	.	227	115	6	7	4	.	.
Wasserkuppe	921	544		15.4	2.1	26.0	15.	6.6	5.	1	.	.	.	74	81	68	32	22.	12	8	.	.	240	121	3	9	6	6	.
Trier-Petrisberg	265	609	17.4	19.7	1.9	34.3	9.	8.4	1.	18	7	.	.	66	32	45	10	22.	8	4	.	.	243	117	6	8	4	.	.
Deuselbach	480	615																											
Geisenheim	109	628	17.0	20.9	2.1	31.4	14.	9.3	5.	19	8	.	.	62	51	95	30	28.	9	5	.	.	244	111	6	6	1	.	.
Kl.Feldberg/Ts.	805	635	17.7	16.0	1.8	25.7	14.	6.5	5.	4	.	.	.	73	54	59	18	28.	13	4	.	.	222	106	5	8	3	.	.
Frankfurt(Flugh.)	111	637	17.5	21.1	2.4	32.0	14.	9.5	1.	21	11	.	.	63	34	49	11	3.	10	5	.	.	232	106	6	8	3	3	.
Darmstadt	108	639	17.1	21.5	2.0	32.2	14.	10.3	1.	19	10	.	.	61	60	82	21	3.	9	6	.	.	242	102	5	9	4	.	.
Würzburg	268	655	17.1	20.3	1.9	30.4	21.	10.8	5.	19	4	.	.	66	36	50	10	3.	8	5	.	.	228	97	4	10	6	.	.
Bad Kissingen	262	658	16.9	20.1	2.2	32.6	15.	8.5	5.	19	7	.	.	66	47	57	13	21.	11	7	.	.	230	105	3	9	5	.	.
Bamberg	239	675	17.3	20.1	1.9	31.8	10.	8.8	5.	19	5	.	.	70	72	88	15	26.	12	9	.	.	239	110	6	9	5	.	.
Coburg	337	671	17.1	20.0	2.4	32.3	15.	7.6	1.	17	4	.	.	63	50	64	23	22.	11	7	.	.	252	110	6	10	4	.	.
Hof-Hohensaas	567	685	17.3	17.1	1.5	29.8	15.	7.6	5.	11	.	.	.	72	65	76	25	3.	9	7	.	.	219	105	5	10	6	.	.
Weiden/Opf.	438	688	17.0	18.8	1.7	31.2	16.	9.0	8.	16	2	.	.	68	62	67	19	22.	9	8	.	.	207	93	6	10	4	.	.
Berus	363	704	17.1	19.4	2.1	30.1	9.	9.9	28.	12	1	.	.	70	78	104	33	3.	8	6	.	.	252	101	8	3	6	.	.
Saarbrücken(Flh.)	323	708	17.0	19.6	2.0	30.7	12.	9.6	5.	15	2	.	.	66	72	104	49	24.	8	4	.	.	271	114	7	8	5	.	.
Neustadt/Weinstr.	163	723	17.0	21.3	2.1	32.2	14.	10.6	5.	20	9	.	.	61	40	67	18	24.	11	4	.	.	228	99	4	9	6	.	.
Karlsruhe	112	727	17.0	21.4	1.9	33.6	14.	10.8	1.	20	8	.	.	67	110	144	62	24.	10	5	.	.	253	106	6	10	4	.	.
Mannheim	96	729	17.1	21.5	1.9	32.0	14.	9.6	1.	21	10	.	.	64	49	74	22	24.	10	6	.	.	236	100	5	9	4	.	.
Stuttgart(Stadt)	286	737	16.7	21.0	1.9	31.0	9.	11.8	1.	16	4	.	.	63	50	63	20	24.	12	8	.	.	228	98	4	8	7	.	.
Stuttg. (Flugh.)	373	738	16.8	19.6	1.6	30.0	15.	9.0	1.	14	1	.	.	71	137	166	50	16.	12	10	.	.			3	7	8	1	.
Öhringen	276	742	16.4	19.9	1.7	31.0	16.	8.4	1.	16	1	.	.	71	89	101	40	24.	11	9	.	.	247	101	4	10	6	.	.
Weißenburg/Bay.	422	761	16.3	19.4	2.3	31.0	16.	7.4	1.	17	4	.	.	67	109	118	37	31.	13	11	.	.	243	100	5	12	7	.	.
Nürnberg(Flugh.)	310	763	16.7	20.4	2.4	31.9	15.	8.5	5.	18	6	.	.	68	91	101	24	25.	13	10	.	.	235	102	4	12	8	.	.
Regensburg	366	776	16.6	19.8	1.8	31.7	21.	9.0	1.	18	5	.	.	68	70	75	24	27.	11	8	.	.	242	105	5	10	7	2	.
Gr.Falkenstein	1307	791		13.4	1.4	23.3	15.	4.5	1.	.	.	.	.	66	57		25	25.	17	10	.	.	209	103	2	10	6	1	.
Freiburg i.Br.	269	803	16.3	21.5	2.0	32.2	11.	11.7	1.	20	9	.	.	67	162	169	58	24.	14	10	.	.	231		4	8	9	1	.
Freudenstadt	797	815	16.4	17.0	2.0	27.6	9.	8.0	1.	10	.	.	.	74	106	97	26	3.	15	11	.	.	235	105	5	8	13	.	.
Klippeneck	973	818		16.7	1.8	27.5	14.	7.4	1.	8	.	.	.	75	147	133	55	24.	14	9	.	.	250	103	3	11	11	.	.
Stötten	734	836	17.2	17.2	1.5	26.3	21.	8.2	1.	8	.	.	.	75	102	91	22	25.	13	10	.	.	238	107	3	10	10	2	.
Ulm	522	838	16.5	19.1	2.1	29.7	15.	8.2	5.	15	.	.	.	71	62	86	30	26.	13	9	.	.	237	99	3	9	9	.	.
Augsburg-Mühlh.	461	852	16.7	19.2	1.4	31.6	15.	8.7	5.	14	2	.	.	72	155	139	51	24.	13	9	.	.	251	105	4	9	8	4	.
München (Flugh.)	527	866	16.5	18.9	1.7	30.2	16.	9.1	5.	16	2	.	.	71	117	86	30	27.	12	9	.	.	252	108	5	8	7	.	.
Mühldorf/Inn	401	875	16.4	19.5	1.9	30.2	16.	10.0	8.	15	2	.	.	72	74	52	15	24.	14	11	.	.	232	100	5	8	7	.	.
Passau	409	893	16.5	19.4	1.7	30.1	21.	8.4	1.	15	1	.	.	71	62	50	26	31.	11	9	.	.	244	107	5	9	6	.	.
Feldberg/Schw.	1486	906		12.9	2.1	23.2	9.	5.3	26.	.	.	.	.	81	319	133	60	24.	18	13	.	.	225	115	3	11	11	8	1
Konstanz	443	929	16.3	19.8	1.4	31.2	16.	11.0	28.	18	4	.	.	72	158	141	43	24.	16	14	.	.	252	107	4	9	9	.	.
Kempten	705	946	16.6	18.0	2.0	29.6	16.	7.8	29.	14	.	.	.	73	169	94	37	26.	14	13	.	.	234	109	3	7	9	.	.
Oberstdorf	810	948	16.7	17.2	1.9	29.2	16.	5.7	29.	15	.	.	.	75	180	73	40	31.	19	12	.	.	212	116	5	10	13	.	.
Zugspitze	2960	961		3.9	1.4	12.0	16.	-2.8	1.	.	.	6	.	96	185	88	33	26.	20	18	10	31	193	115	2	16	14	11	4
Hohenpeißenberg	977	962		16.7	1.6	27.8	3.	8.6	4.	3	.	.	.	73	198	118	36	18.	16	12	.	.	250	116	3	9	10	2	.
Garmisch-Partk.	719	963	16.9	17.3	1.3	30.4	3.	6.5	29.	14	2	.	.	77	118	61	27	15.	18	14	.	.	216	120	4	10	13	.	.
Wendelstein	1832	980		11.5	2.0	20.4	15.	2.8	1.	.	.	.	.	79	209	66	66	26.	17	16	.	.	207	120	3	9	6	6	2

Klimatologische Werte für August 1982

Station	Höhe über NN m	Kenn-ziffer	Luftdruck auf NN reduziert mbar	Lufttemperatur Mittel °C	Abwei-chung	Höchster Wert °C	am	Tiefster Wert °C	am	Sommer-tage	Heiße Tage	Frost-tage	Eis-tage	rel. Feuchte %	Niederschlag mm	%	Höchst. Wert mm	am	Tage mit ≥ 0,1mm	≥ 1,0mm	Schnee-fall	Schnee-decke	Sonnenschein Std.	%	Bewölkung Heit. Tage	Trübe Tage	Gewitter-tage	Wind Windtage ≥6 Bft	Sturmtage ≥8 Bft
Helgoland	4	015	12.1	17.8	0.8	26.2	4.	11.4	20.	4	.	.	.	75	111	124	21	5.	19	13	.	.	258	132	5	7	6	15	2
List auf Sylt	26	020	11.3	17.4	0.8	28.5	4.	10.0	20.	5	.	.	.	77	193	220	52	15.	19	18	.	.	258	125	2	4	7	15	2
Schwesing	28	026	12.3	16.6	0.7	30.0	5.	6.6	29.	8	1	.	.	77	164	166	39	20.	24	19	.	.	221		2	2	11	1	.
Schleswig	43	035	12.5	16.9	0.9	30.0	7.	8.2	29.	8	1	.	.	75	129	133	25	20.	19	15	.	.	225	120	3	7	7	2	.
Kiel-Kronshagen	17	045	12.6	16.9	0.6	30.0	5.	5.9	29.	8	1	.	.	74	73	81	14	20.	21	13	.	.	223	118	2	5	8	.	.
Norderney	11	113	12.4	17.7	0.6	28.3	4.	11.1	20.	6	.	.	.	77	137	171	34	5.	16	13	.	.	202	107	2	5	5	10	.
Bremerhaven	7	129	13.2	17.9	0.8	31.2	1.	9.2	29.	6	4	.	.	78	66	76	13	5.	18	14	.	.	195	107	2	7	8	9	.
Cuxhaven	5	131	12.8	17.6	0.4	28.5	4.	9.7	26.	6	.	.	.	76	67	75	16	20.	21	15	.	.	220	112	4	9	6	3	.
Hamburg (Flugh.)	13	147	13.4	17.5	0.9	31.5	5.	5.1	29.	7	2	.	.	76	82	98	17	14.	22	17	.	.	200	109	2	8	7	1	.
Lübeck	8	156	13.2	17.9	0.7	31.4	4.	9.0	29.	8	3	.	.	71	68	80	11	22.	20	17	.	.	208	103	2	11	4	.	.
Emden-Nesserland	6	203	12.5	17.7	0.8	30.2	2.	10.5	29.	7	1	.	.	75	74	81	12	12.	20	13	.	.	197	108	2	5	5	7	.
Bremen (Flugh.)	4	224	13.2	17.1	0.0	30.7	2.	5.1	29.	7	4	.	.	78	77	98	15	12.	19	16	.	.	195	107	1	8	5	4	.
Soltau	77	235	13.6	17.4	0.8	30.7	1.	5.6	29.	7	4	.	.	75	76	93	17	12.	18	12	.	.	191	104	2	10	6	.	.
Lüchow	17	253	13.8	17.9	0.7	30.9	5.	6.2	15.	10	4	.	.	72	54	81	16	26.	14	10	.	.	221	115	2	10	6	.	.
Lingen	21	305	13.5	17.6	0.6	31.3	4.	6.8	29.	8	3	.	.	71	39	43	6	15.	19	12	.	.	172	106	1	7	3	.	.
Münster	60	313	12.8	17.6	0.5	31.5	2.	7.1	29.	7	2	.	.	74	68	86	22	18.	19	15	.	.	175	100	2	10	2	.	.
Osnabrück	95	317	14.2	17.7	0.7	30.7	2.	7.2	29.	8	3	.	.	71	56	68	12	18.	21	13	.	.	186	109	3	8	5	.	.
Bad Salzuflen	98	325	13.6	17.9	0.8	29.7	3.	7.6	29.	9	.	.	.	73	85	107	22	26.	20	13	.	.	188	112	2	12	5	.	.
Hannover (Flugh.)	53	338	14.0	18.0	1.0	30.5	1.	8.1	29.	7	4	.	.	73	73	100	12	18.	19	16	.	.	210	112	1	8	7	.	.
Braunschweig-V.	81	348	14.0	17.9	0.7	30.1	3.	8.7	29.	8	1	.	.	70	85	127	27	26.	15	14	.	.	215	119	1	11	7	.	.
Berlin-Dahlem	51	381	14.4	18.5	0.8	31.3	5.	8.3	29.	11	2	.	.	67	46	68	32	8.	14	5	.	.	227	107	4	4	4	.	.
Berlin-Temp.(Flugh.)	48	384	14.1	20.3	1.7	31.6	5.	10.4	29.	14	6	.	.	57	16	24	10	15.	7	4	.	.	237		5	5	5	2	.
Bocholt-Liedern	21	406	14.0	17.3	0.2	32.2	2.	6.4	29.	7	2	.	.	77	129	163	67	4.	21	15	.	.	185	104	2	8	4	1	.
Essen-Bredeney	154	410	14.5	17.5	0.2	31.0	2.	9.5	29.	6	1	.	.	73	104	106	30	17.	20	17	.	.	183	107	.	11	7	.	.
Düsseldorf(Flugh.)	37	400	14.9	18.4		32.0	2.	8.6	29.	7	3	.	.	71	85		16	18.	18	14	.	.	182		.	8	5	.	.
Kahler Asten	839	427		13.1	0.1	25.7	2.	5.7	29.	1	.	.	.	81	87	65	30	26.	20	15	.	.	165	104	.	14	6	2	.
Bad Lippspringe	157	430	14.0	17.5	0.7	31.0	2.	7.8	29.	7	2	.	.	73	133	143	36	5.	19	15	.	.	188		2	14	6	.	.
Kassel	231	438	14.2	18.1	1.2	30.2	2.	8.2	29.	8	1	.	.	66	37	54	17	26.	12	7	.	.	210		2	8	4	.	.
Göttingen	175	444	14.5	17.8	0.9	32.3	1.	7.6	29.	11	4	.	.	67	26	37	16	26.	13	5	.	.	204	118	1	10	4	.	.
Braunlage	607	452	14.3	14.8	0.7	26.7	12.	6.3	28.	4	.	.	.	74	78	75	18	6.	17	11	.	.	213	122	1	10	6	.	.
Aachen	202	501																											
Nürburg	627	510	15.2	15.0	0.0	25.4	12.	7.3	21.	1	.	.	.	76	114	130	63	7.	14	7	.	.	195		.	8	6	.	.
Köln-Wahn(Flugh.)	73	513	14.9	17.8	0.3	31.2	2.	6.2	29.	9	2	.	.	73	78	95	28	5.	15	10	.	.	177		.	10	4	.	.
Bad Marienberg	547	526	14.4	15.1	0.3	25.9	2.	7.2	21.	2	.	.	.	80	86	85	15	1.	17	10	.	.	177	100	2	13	5	.	.
Gießen-Liebigsh.	186	532	14.5	18.3	0.9	30.3	12.	8.4	29.	8	1	.	.	70	52	82	21	26.	11	5	.	.	200	100	2	9	3	.	.
Bad Hersfeld	212	542	14.7	18.4	1.8	30.4	12.	6.9	30.	11	2	.	.	66	15	20	4	23.	13	5	.	.	197	116	.	6	2	.	.
Wasserkuppe	921	544		13.4	0.4	24.0	12.	5.4	21.	.	.	.	.	81	29	25	9	18.	20	8	.	.	189	107	1	12	4	7	.
Trier-Petrisberg	265	609	15.5	17.2	0.0	30.3	2.	8.0	21.	9	1	.	.	77	84	105	33	5.	15	10	.	.	196	107	1	10	4	.	.
Deuselbach	480	615	15.1	15.8	-0.2	27.5	12.	6.7	21.	2	.	.	.	78	114	130	57	4.	18	10	.	.	205	96	1	13	5	.	.
Geisenheim	109	628	15.0	18.4	0.3	30.0	12.	8.4	21.	10	1	.	.	70	30	49	9	7.	13	6	.	.	199	101	1	7	4	.	.
Kl.Feldberg/Ts.	805	635	15.5	14.0	0.1	24.7	12.	5.6	21.	.	.	.	.	79	47	47	15	26.	16	9	.	.	178	96	3	7	3	.	.
Frankfurt(Flugh.)	111	637	15.4	18.9	1.0	32.0	12.	8.3	23.	13	1	.	.	71	28	37	6	26.	10	5	.	.	197	100	3	4	5	.	.
Darmstadt	108	639	15.3	18.8	0.2	32.0	12.	9.0	30.	10	1	.	.	71	52	71	24	18.	18	8	.	.	195	96	2	10	2	.	.
Würzburg	268	655	15.4	18.1	0.3	29.6	12.	7.7	23.	9	.	.	.	71	45	66	16	8.	15	10	.	.	171	83	4	6	4	.	.
Bad Kissingen	262	658	14.9	17.8	0.8	30.6	12.	7.8	23.	10	1	.	.	73	44	66	15	18.	21	9	.	.	176	88	.	10	3	.	.
Bamberg	239	675	15.7	17.6	0.5	30.1	12.	6.8	30.	7	1	.	.	79	67	98	35	3.	16	11	.	.	188	99	3	11	2	.	.
Coburg	337	671	15.1	18.0	1.3	30.0	12.	7.4	23.	9	1	.	.	73	35	48	7	13.	17	8	.	.	196	93	1	8	3	.	.
Hof-Hohensaas	567	685	14.9	15.8	0.9	27.2	12.	6.3	23.	6	.	.	.	76	110	159	34	8.	18	9	.	.	187	97	2	7	6	.	.
Weiden/Opf.	438	688	15.5	16.9	0.6	29.8	12.	6.0	23.	6	.	.	.	75	66	99	18	3.	17	9	.	.	190	92	4	5	5	.	.
Berus	363	704	15.8	17.0	0.1	27.9	12.	7.4	21.	3	.	.	.	75	61	69	18	7.	16	10	.	.	184	81	3	6	4	.	.
Saarbrücken(Flh.)	323	708	15.8	16.9	-0.1	27.5	12.	5.5	21.	3	.	.	.	76	45	56	14	7.	17	10	.	.	198	88	1	14	6	.	.
Neustadt/Wstr.	163	723	15.5	18.5	0.0	30.8	12.	7.6	21.	11	1	.	.	70	46	78	10	7.	15	8	.	.	194	90	4	5	3	.	.
Karlsruhe	112	727	15.9	18.8	0.2	31.7	12.	8.7	21.	14	1	.	.	76	63	79	11	7.	18	12	.	.	202	93	3	9	6	.	.
Mannheim	96	729	15.7	19.2	0.4	32.0	12.	8.3	21.	16	1	.	.	73	38	52	9	23.	13	8	.	.	188	86	1	6	5	.	.
Stuttgart(Stadt)	286	737	16.0	18.4	0.0	30.9	12.	10.0	21.	9	1	.	.	70	138	174	45	16.	15	13	.	.	187	86	3	10	5	.	.
Stuttg. (Flugh.)	373	738	16.1	17.3	-0.1	29.6	12.	6.5	21.	7	.	.	.	76	103	132	17	16.	16	14	.	.			4	8	5	.	.
Öhringen	276	742	15.4	17.4	-0.1	30.1	12.	6.4	21.	8	1	.	.	78	65	80	8	13.	18	13	.	.	193	86	4	6	5	.	.
Weißenburg/Bay.	422	761	15.4	17.3	0.8	30.6	12.	6.6	29.	7	1	.	.	73	107	149	57	6.	13	12	.	.	189	82	3	8	8	.	.
Nürnberg(Flugh.)	310	763	15.6	17.8	0.5	31.5	12.	7.0	21.	10	1	.	.	75	62	83	10	3.	17	11	.	.	192	90	2	6	6	.	.
Regensburg	366	776	15.8	17.5	0.3	30.2	12.	7.5	21.	9	1	.	.	80	91	123	21	3.	16	13	.	.	196	94	1	7	9	.	.
Gr.Falkenstein	1307	791		11.9	0.1	21.1	3.	3.5	21.	.	.	.	.	78	127		20	8.	19	15	.	.	169	84	1	9	9	.	.
Freiburg i.Br.	269	803	16.1	18.8	-0.1	30.3	12.	10.0	21.	12	1	.	.	73	128	135	22	16.	18	14	.	.	187		5	13	5	.	.
Freudenstadt	797	815	16.0	14.4	-0.2	25.4	12.	6.4	20.	1	.	.	.	81	133	101	28	19.	20	15	.	.	194	94	3	8	6	.	.
Klippeneck	973	818		14.0	-0.6	25.1	12.	6.0	21.	1	.	.	.	86	118	114	16	20.	17	15	.	.	198	89	4	10	6	.	.
Stötten	734	836	16.4	15.1	-0.3	27.1	12.	5.5	21.	1	.	.	.	80	100	98	22	4.	16	14	.	.	178	89	2	12	7	3	.
Ulm	522	838	16.1	16.5	0.2	29.0	12.	6.6	21.	6	.	.	.	79	71	88	18	6.	15	13	.	.	193	88	1	7	10	.	.
Augsburg-Mühlh.	461	852	16.2	16.9	-0.3	29.5	12.	6.2	21.	6	.	.	.	79	114	142	33	3.	16	15	.	.	195	87	3	5	8	2	.
München (Flugh.)	527	866	16.1	16.7	0.1	30.3	12.	6.3	23.	6	1	.	.	78	130	125	22	3.	18	15	.	.	185	84	3	10	7	.	.
Mühldorf/Inn	401	875	15.8	17.4	0.6	29.9	12.	6.5	22.	9	.	.	.	81	162	182	28	31.	19	13	.	.	185	85	1	8	8	.	.
Passau	409	893	15.9	17.3	0.3	28.6	15.	7.5	22.	9	.	.	.	81	105	103	22	15.	17	12	.	.	189	90	1	12	8	.	.
Feldberg/Schw.	1486	908		10.2	-0.5	19.0	12.	2.8	21.	.	.	.	.	88	177	104	31	6.	17	17	.	.	154	85	1	14	5	10	.
Konstanz	443	929																											
Kempten	705	946	16.5	15.4	0.1	28.2	12.	5.3	23.	4	.	.	.	82	171	130	39	31.	22	21	.	.	183	88	3	10	9	.	.
Oberstdorf	810	948	16.7	14.8	0.3	27.6	12.	4.2	23.	3	.	.	.	81	225	117	40	31.	20	16	.	.	145	83	3	12	8	.	.
Zugspitze	2960	961		2.6	0.2	11.3	15.	-6.5	22.	.	.	12	2	89	161	90	44	31.	21	19	9	31	140	82	2	18	7	19	5
Hohenpeißenberg	977	962		14.5	-0.2	27.1	12.	5.4	21.	2	.	.	.	80	259	203	52	8.	21	17	.	.	184	86	3	10	10	4	.
Garmisch-Partk.	719	963	16.8	15.1	-0.1	28.4	12.	5.1	23.	4	.	.	.	86	179	108	33	31.	21	15	.	.	161	87	2	13	7	.	.
Wendelstein	1832	980		9.6	0.3	20.4	12.	0.3	21.	.	.	.	.	84	166	63	28	31.	19	14	.	.	136	76	2	14	9	12	1
Nachtrag Juli 1982: Deuselbach			17.0	18.2	1.9	30.3	9.	8.0	1.	12	1	.	.	69	47	57	14	31.	8	7	.	.	241	105	4	7	5	2	.

Klimatologische Werte für September 1982

Station	Höhe ü. NN m	Kennziffer	Luftdruck auf NN reduziert mbar	Lufttemperatur Mittel °C	Abweichung	Höchster Wert °C	am	Tiefster Wert °C	am	Sommertage	Heiße Tage	Frosttage	Eistage	rel. Feuchte %	Niederschlag mm	%	Höchst. Wert mm	am	Tage mit ≥ 0,1 mm	≥ 1,0 mm	Hagel	Schneedecke	Sonnenschein Std.	%	Bewölkung Heitere Tage	Trübe Tage	Gewittertage	Wind Windtage ≥ 6 Bft	Sturmtage ≥ 8 Bft
Helgoland	4	015	16.4	16.0	0.7	20.4	20.	11.6	22.	.	.	.	.	77	13	17	4	20.	12	3	.	.	152	92	2	6	2	16	1
List auf Sylt	28	020	15.7	14.6	0.4	20.0	10.	9.5	23.	.	.	.	.	81	39	50	15	5.	11	7	.	.	143	79	1	7	2	12	1
Schwesing	28	026	16.8	13.8	0.8	23.7	20.	5.0	12.	.	.	.	.	81	28	31	8	20.	11	5	.	.	137		2	5	2	2	
Schleswig	43	035	16.8	14.3	1.2	23.8	20.	6.0	12.	.	.	.	.	78	38	46	14	5.	9	5	.	.	147	84	3	8	3	.	.
Kiel-Kronshagen	17	045	16.8	14.4	1.1	24.3	20.	4.4	12.	.	.	.	.	79	23	33	7	5.	8	6	.	.	155	86	6	7	2	.	.
Norderney	11	113	16.5	15.4	0.5	23.9	19.	9.2	23	.	.	.	.	80	31	59	12	20.	9	5	.	.	168	107	2	6	1	4	.
Bremerhaven	7	129	17.2	15.8	1.6	24.7	20.	7.2	23.	.	.	.	.	81	20	29	8	20.	7	5	.	.	139	84	2	4	3	4	.
Cuxhaven	5	131	16.9	15.5	1.0	24.9	20.	6.6	23.	.	.	.	.	78	37	44	20	20.	9	5	.	.	154	90	2	6	2	3	.
Hamburg (Flugh.)	13	147	17.7	15.1	1.6	25.6	20.	4.4	12.	2	.	.	.	79	16	27	6	5.	7	5	.	.	157	92	2	7	3	1	.
Lübeck	8	156																											
Emden-Nesserland	6	203	16.3	15.7	1.5	25.5	19.	9.0	12.	3	.	.	.	78	18	25	5	19.	10	6	.	.	169	105	1	6	2	2	1
Bremen (Flugh.)	4	224	17.1	15.2	1.2	27.3	15.	4.4	23.	4	.	.	.	79	15	25	5	26.	7	4	.	.	172	105	5	3	3	2	.
Soltau	77	235	17.7	15.1	1.8	27.0	15.	4.4	23.	5	.	.	.	78	22	39	11	20.	7	4	.	.	184	108	4	8	3	1	.
Lüchow	17	253	17.8	15.4	1.7	28.8	20.	4.3	29.	8	.	.	.	74	7	16	2	5.	5	3	.	.	202	111	3	7	2	.	.
Lingen	21	305	17.0	16.4	2.3	27.5	15.	5.2	23.	5	.	.	.	75	16	23	5	30.	8	5	.	.	154	110	3	5	1	1	.
Münster	60	313	16.2	16.5	2.3	27.9	18.	6.0	23.	7	.	.	.	74	19	31	6	26.	7	4	.	.	178	111	5	6	1	.	.
Osnabrück	95	317	17.7	16.7	2.8	28.3	18.	6.5	23.	6	.	.	.	71	23	36	9	30.	9	4	.	.	181	116	7	7	1	.	.
Bad Salzuflen	98	325	17.2	16.5	2.4	28.0	15.	6.8	23.	6	.	.	.	74	23	38	5	5.	8	8	.	.	178	113	3	7	2	.	.
Hannover (Flugh.)	53	338	17.9	16.2	2.4	28.0	20.	5.3	23.	5	.	.	.	76	35	65	20	6.	8	5	.	.	185	112	6	9	2	1	.
Braunschweig-V.	81	348	17.8	16.7	2.7	27.5	18.	6.5	23.	6	.	.	.	70	18	35	5	5.	9	6	.	.	192	114	5	5	3	.	.
Berlin-Dahlem	51	381	18.7	16.0	2.1	27.8	20.	7.5	24.	10	.	.	.	72	15	33	9	6.	4	2	.	.	230	119	11	2	2	.	.
Berlin-Temp.(Flugh.)	48	384	18.5	17.7	2.6	28.9	20.	9.2	10.	11	.	.	.	63	8	18	5	5.	4	2	.	.	227		10	1	2	.	.
Bocholt-Liedern	21	406	17.1	16.1	1.9	27.7	15.	4.1	23.	7	.	.	.	79	35	50	20	30.	7	5	.	.	174	116	3	8	.	1	.
Essen-Bredeney	154	410	17.5	17.1	2.5	27.2	5.	8.0	23.	7	.	.	.	73	54	70	19	26.	12	7	.	.	179	119	5	7	3	.	.
Düsseldorf(Flugh.)	37	400	17.8	17.6		29.3	5.	6.6	23.	12	.	.	.	71	42		17	30.	14	6	.	.	167		9	7	2	1	.
Kahler Asten	839	427		12.8	2.5	23.9	17.	4.4	23.	.	.	.	.	80	56	52	20	20.	13	10	.	.	182	124	5	5	2	2	.
Bad Lippspringe	157	430	17.4	16.6	2.5	28.3	18.	6.1	23.	7	.	.	.	74	22	31	6	1.	9	6	.	.	177		8	5	2	.	.
Kassel	231	438	17.9	16.6	2.8	28.1	17.	5.2	3.	10	.	.	.	71	13	25	4	26.	7	5	.	.	206		5	4	1	1	.
Göttingen	175	444	18.3	16.3	2.7	28.5	15.	6.3	23.	13	.	.	.	73	19	40	6	6.	9	7	.	.	195	126	4	5	1	.	.
Braunlage	607	452	18.3	13.8	2.5	25.4	16.	3.0	23.	2	.	.	.	76	44	45	15	6.	7	7	.	.	188	117	4	6	2	.	.
Aachen	202	501																											
Nürburg	627	510	18.0	15.1	2.8	25.5	17.	6.2	22.	2	.	.	.	74	61	103	15	5.	10	7	.	.	207		10	6	3	1	.
Köln-Wahn(Flugh.)	73	513	17.9	16.3	1.8	30.5	5.	4.4	3.	12	1	.	.	76	68	118	20	5.	13	10	.	.	185		5	5	3	.	.
Bad Marienberg	547	526	17.5	14.9	2.7	25.6	17.	6.1	3.	1	.	.	.	78	49	61	9	18.	11	9	.	.	204	129	8	5	3	.	.
Gießen-Liebigsh.	186	532	18.1	16.5	2.5	29.1	16.	6.4	3.	12	.	.	.	72	28	58	10	18.	8	6	.	.	210	136	4	3	2	.	.
Bad Hersfeld	212	542	18.5	16.2	2.9	29.6	5.	4.6	3.	14	.	.	.	71	12	22	4	26.	6	4	.	.	204	138	4	3	3	.	.
Wasserkuppe	921	544		13.4	3.2	24.3	16.	4.5	23.	.	.	.	.	75	26	27	14	21.	9	6	.	.	211	139	8	3	2	9	.
Trier-Petrisberg	265	609	17.9	16.7	2.3	30.8	5.	7.4	3.	12	1	.	.	75	42	73	16	21.	12	6	.	.	201	128	8	4	3	3	.
Deuselbach	480	615	17.7	15.7	2.3	27.0	17.	7.3	3.	7	.	.	.	76	34	52	12	21.	11	6	.	.	221	124	7	6	2	2	.
Geisenheim	109	628	18.0	17.2	2.4	28.8	5.	8.0	3.	14	.	.	.	72	18	42	7	6.	8	4	.	.	215	132	11	3	2	.	.
Kl.Feldberg/Ts.	805	635	18.5	14.1	2.9	24.0	17.	5.9	22.	.	.	.	.	77	40	49	11	6.	10	6	.	.	203	128	10	5	1	.	.
Frankfurt(Flugh.)	111	637	18.5	17.3	2.8	29.6	5.	5.2	3.	14	.	.	.	73	34	61	14	18.	8	4	.	.	207	128	9	3	2	.	.
Darmstadt	108	639	18.3	17.8	2.2	30.0	5.	5.7	3.	14	1	.	.	71	34	60	13	6.	8	5	.	.	218	122	9	4	1	.	.
Würzburg	268	655	18.6	16.9	2.5	30.1	5.	6.6	3.	14	1	.	.	72	17	32	4	22.	7	6	.	.	204	121	8	2	.	.	.
Bad Kissingen	262	658	18.4	16.1	2.6	29.2	5.	5.7	23.	15	.	.	.	74	22	44	11	5.	7	5	.	.	190	120	9	1	1	.	.
Bamberg	239	675	19.1	15.5	1.8	29.0	17.	3.5	29.	16	.	.	.	76	11	21	4	26.	7	3	.	.	209	133	5	3	1	.	.
Coburg	337	671	18.8	16.2	2.8	29.2	17.	5.8	24.	15	.	.	.	75	28	51	8	30.	7	6	.	.	212	125	8	2	1	.	.
Hof-Hohensaas	567	685	18.7	14.6	2.9	27.4	5.	3.4	29.	5	.	.	.	74	39	76	18	6.	10	5	.	.	226	135	7	3	2	.	.
Weiden/Opf.	438	688	19.0	15.8	2.7	29.8	5.	2.8	24.	12	.	.	.	72	13	23	4	26.	7	5	.	.	207	121	9	3	1	.	.
Berus	363	704	18.0	17.0	2.9	28.4	5.	8.6	27.	12	.	.	.	73	49	67	15	21.	11	8	.	.	217	120	9	2	1	2	.
Saarbrücken(Flh.)	323	708	18.0	17.3	3.2	28.4	16.	8.0	3.	10	.	.	.	71	36	53	11	26.	11	8	.	.	214	119	8	5	2	.	.
Neustadt/Wstr.	163	723	18.2	17.6	2.4	29.5	5.	8.0	4.	15	.	.	.	70	26	51	8	22.	9	6	.	.	220	120	10	5	1	.	.
Karlsruhe	112	727	18.4	17.7	2.5	30.7	5.	7.6	4.	16	1	.	.	76	35	54	10	22.	8	6	.	.	225	124	11	5	2	.	.
Mannheim	96	729	18.4	17.9	2.7	30.6	5.	6.3	3.	15	1	.	.	72	25	44	9	22.	8	5	.	.	210	116	10	6	1	.	.
Stuttgart(Stadt)	286	737	18.5	17.5	2.3	29.2	5.	9.4	29.	13	.	.	.	72	33	53	9	22.	7	6	.	.	219	125	11	5	3	.	.
Stuttg. (Flugh.)	373	738	18.8	16.0	1.7	28.0	5.	6.2	29.	11	.	.	.	77	37	55	11	22.	7	6	.	.			7	2	2	.	.
Öhringen	276	742	18.2	16.4	2.1	28.9	5.	6.6	3.	13	.	.	.	78	38	56	9	21.	7	6	.	.	219	119	14	3	3	.	.
Weißenburg/Bay.	422	761	18.4	16.0	2.6	29.7	5.	3.7	24.	11	.	.	.	73	32	55	14	30.	6	6	.	.	211	115	6	4	2	1	.
Nürnberg(Flugh.)	310	763	18.7	16.2	2.4	28.9	5.	4.9	24.	13	.	.	.	74	24	52	10	21.	6	6	.	.	227	130	8	4	1	1	.
Regensburg	366	776	19.1	15.7	1.9	27.5	5.	5.5	24.	7	.	.	.	82	22	42	9	26.	7	5	.	.	193	113	6	5	2	1	.
Gr.Falkenstein	1307	791		12.6	3.4	22.7	26.	1.7	24.	.	.	.	.	61	21		8	26.	11	4	.	.	210	125	9	5	.	.	.
Freiburg i.Br.	269	803	18.2	18.3	2.7	30.4	5.	9.6	3.	13	1	.	.	72	46	53	16	22.	8	6	.	.	201		8	4	3	.	.
Freudenstadt	797	815	18.5	14.6	2.7	26.4	5.	5.3	24.	1	.	.	.	75	48	41	14	5.	8	6	.	.	214	123	8	2	3	.	.
Klippeneck	973	818		14.2	2.3	25.8	5.	5.2	24.	1	.	.	.	82	39	50	15	22.	9	6	.	.	220	117	5	5	4	.	.
Stötten	734	836	18.9	15.3	2.7	25.9	5.	6.2	24.	1	.	.	.	77	46	52	15	6.	7	5	.	.	203	117	6	3	3	1	.
Ulm	522	838	19.0	15.0	2.0	28.6	5.	4.6	24.	6	.	.	.	80	45	66	11	30.	11	7	.	.	175	101	5	4	3	.	.
Augsburg-Mühlh.	461	852	19.0	15.4	1.6	29.4	5.	4.9	24.	8	.	.	.	82	55	77	21	30.	7	5	.	.	171	95	8	6	.	.	.
München (Flugh.)	527	866	19.0	15.4	2.1	28.7	5.	5.1	24.	7	.	.	.	81	35	40	19	30.	8	6	.	.	190	105	11	5	1	.	.
Mühldorf/Inn	401	875	18.9	15.6	2.0	27.4	5.	5.4	30.	6	.	.	.	83	18	52	10	26.	9	7	.	.	174	[illegible]	5	8	1	.	.
Passau	409	893	17.2	15.9	2.2	28.1	5.	6.2	4.	9	.	.	.	82	28	41	9	6.	8	6	.	.	192	111	5	7	1	.	.
Feldberg/Schw.	1486	908		11.0	2.6	20.3	5.	2.0	24.	.	.	.	.	81	67	45	20	22.	11	7	.	.	193	125	6	6	4	12	3
Konstanz	443	929	18.6	16.5	2.2	26.7	12.	7.9	24.	7	.	.	.	84	56	69	14	30.	10	5	.	.	161	96	4	7	5	.	.
Kempten	705	946	19.1	14.3	2.0	26.9	5.	4.5	24.	5	.	.	.	83	77	62	27	30.	9	4	.	.	191	110	9	6	2	.	.
Oberstdorf	810	948	19.2	14.0	2.3	27.5	4.	2.4	24.	5	.	.	.	80	88	55	25	30.	10	9	.	.	180	116	10	8	3	.	.
Zugspitze	2960	961		3.5	2.9	12.5	5.	-6.7	24.	.	.	11	.	76	78	55	31	30.	11	8	5	15	228	128	8	6	3	12	6
Hohenpeißenberg	977	962		14.6	2.5	25.2	4.	5.5	24.	1	.	.	.	78	69	62	24	30.	11	9	.	.	192	107	8	6	4	.	.
Garmisch-Partk.	719	963	19.2	14.3	1.9	27.4	5.	3.0	24.	7	.	.	.	83	85	69	35	30.	11	9	.	.	208	121	7	7	2	.	.
Wendelstein	1832	980		10.7	3.2	21.5	5.	1.5	23.	.	.	.	.	75	70	35	30	30.	9	6	.	.	191	117	10	8	2	7	2
Nachtrag August 1982																													
Aachen			15.0	17.3	0.1	28.3	3.	9.4	29.	4	.	.	.	74	109	133	43	1.	17	12	.	.	184	98	3	4	5	.	.
Konstanz			16.1	17.6	0.0	30.2	12.	8.5	21.	7	1	.	.	79	116	125	19	15.	21	16	.	.	205	92	2	10	11	.	.

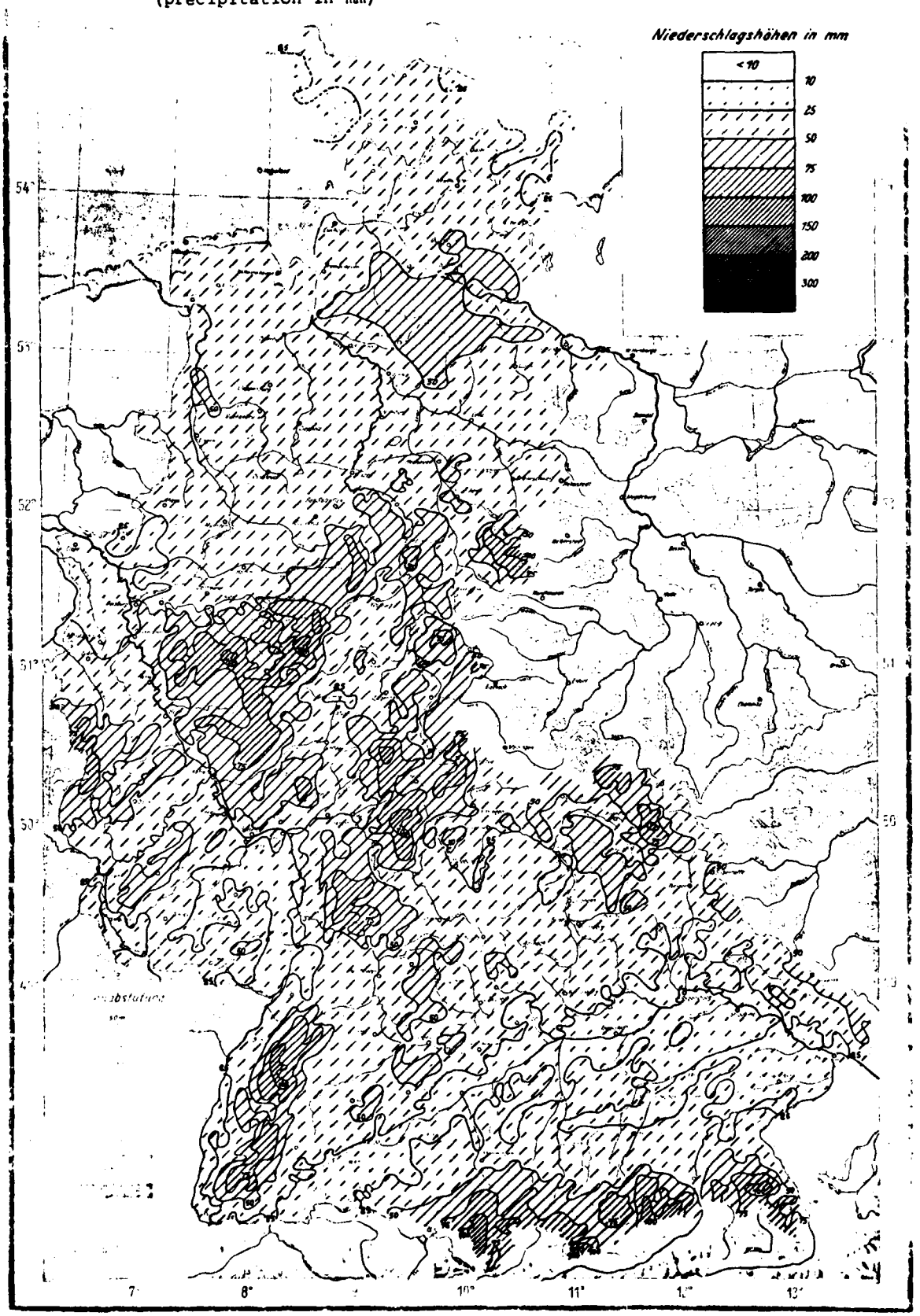
Legend of Meteorological Data for Table 1

Headings of column 1 to 29

1	Altitude above sea level
2	Code No. (internal, for weather service)
3	Atmospheric pressure reduced to sea level (mbar)
4	Mean temperature (^{O}C)
5	Deviation from mean value 1931-1960 (^{O}C)
6	Maximum temperature (^{O}C)
7	Maximum temperature at ... (date = day of current month)
8	Minimum temperature (^{O}C)
9	Minimum temperature at ... (date = day of current month)
10	Number of summerdays
11	Number of hot days
12	Number of frosty days
13	Number of ice days
14	Relative humidity, mean value (%)
15	Precipitation (mm)
16	Precipitation in % of the 1931-1960 mean value
17	Maximum value (mm)
18	Maximum value at ... (date = day of current month)
19	Number of days with precipitation above 0.1 mm
20	Number of days with precipitation above 1.0 mm
21	Number of days with snowfall
22	Number of days with snow cover
23	Number of hours of sunshine
24	Sunshine in % of the 1951-1960 mean value
25	Number of clear days
26	Number of cloudy days
27	Number of thunderstorm days
28	Number of windy days (windspeed Beaufort 6 and above)
29	Number of stormy days (windspeed Beaufort 8 and above)

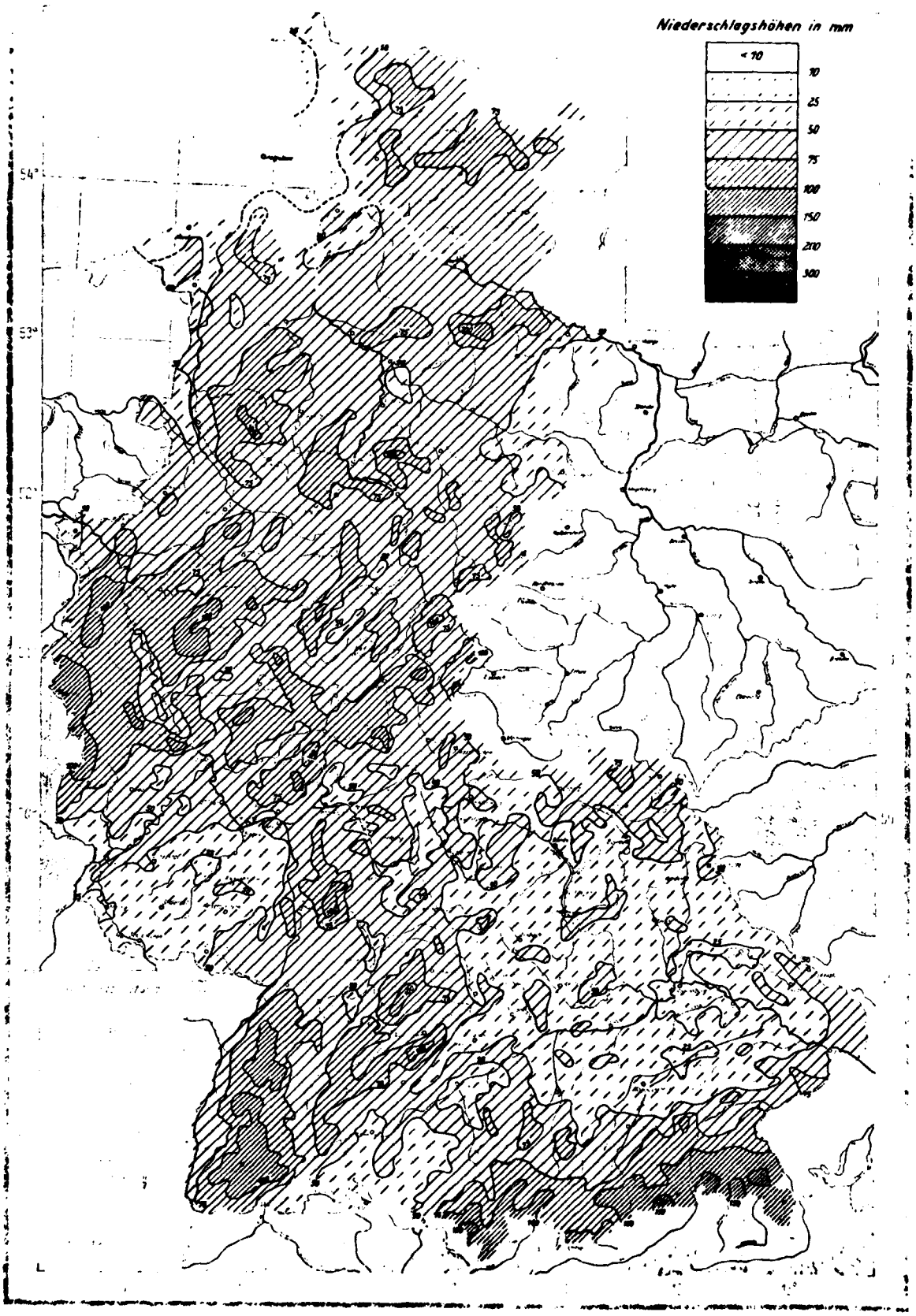
April 1982

Table 1 ctd: Graphical Representation of Meteorological Data (precipitation in mm)



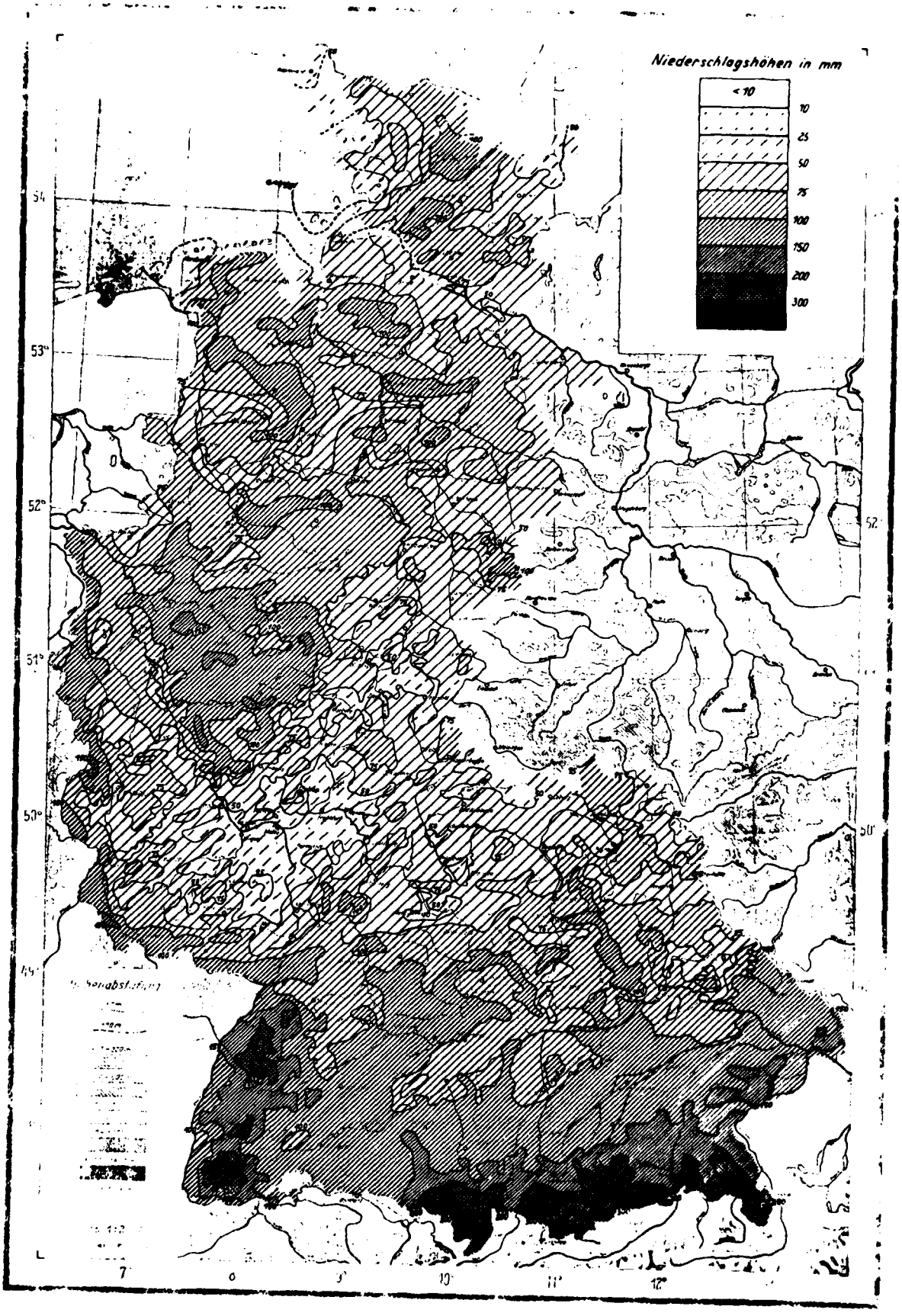
Verteilung der Niederschlagshöhen in mm

Mai 1982



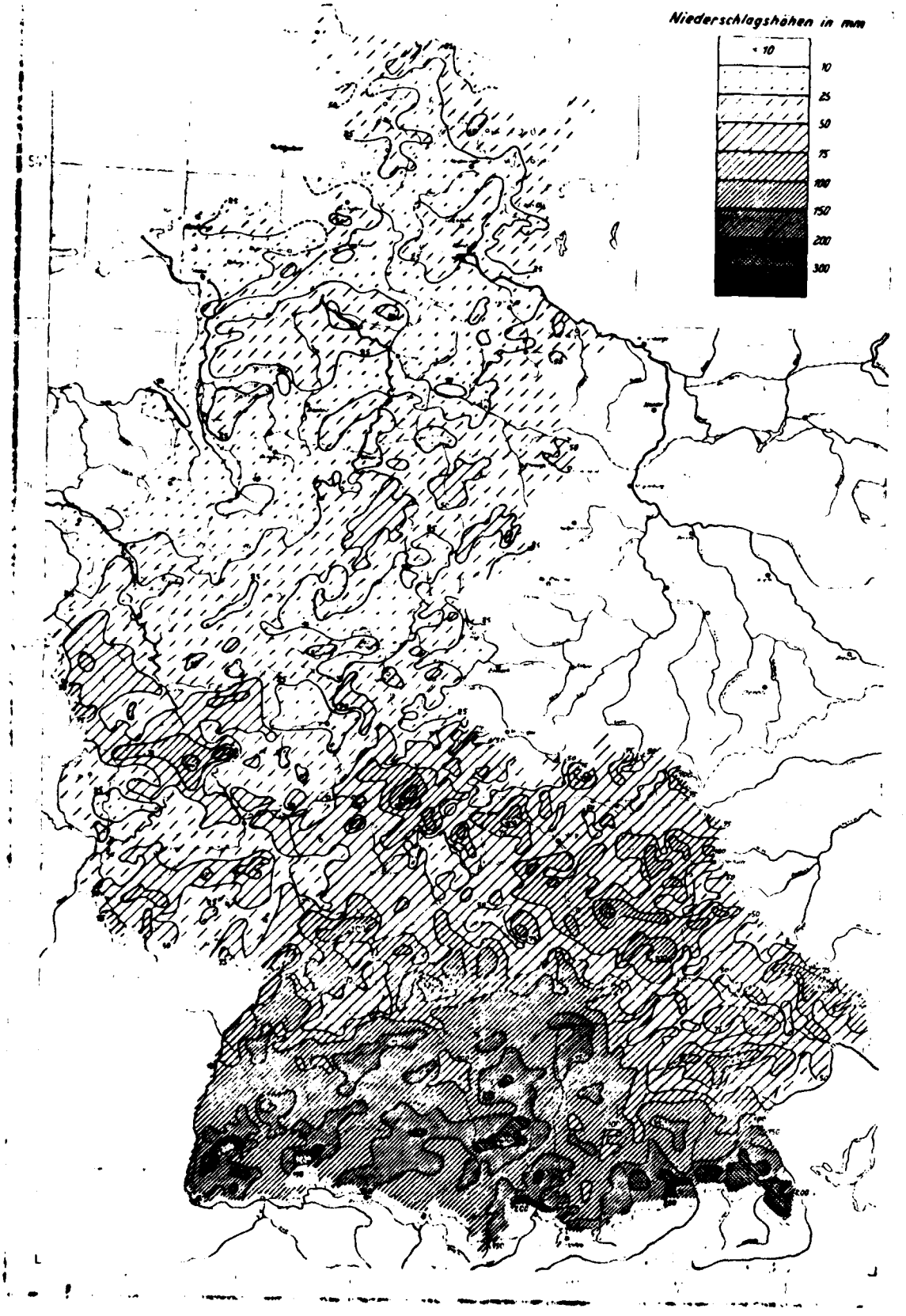
Verteilung der Niederschlagshöhen in mm

Juni 1982



Verteilung der Niederschlagshöhen in mm

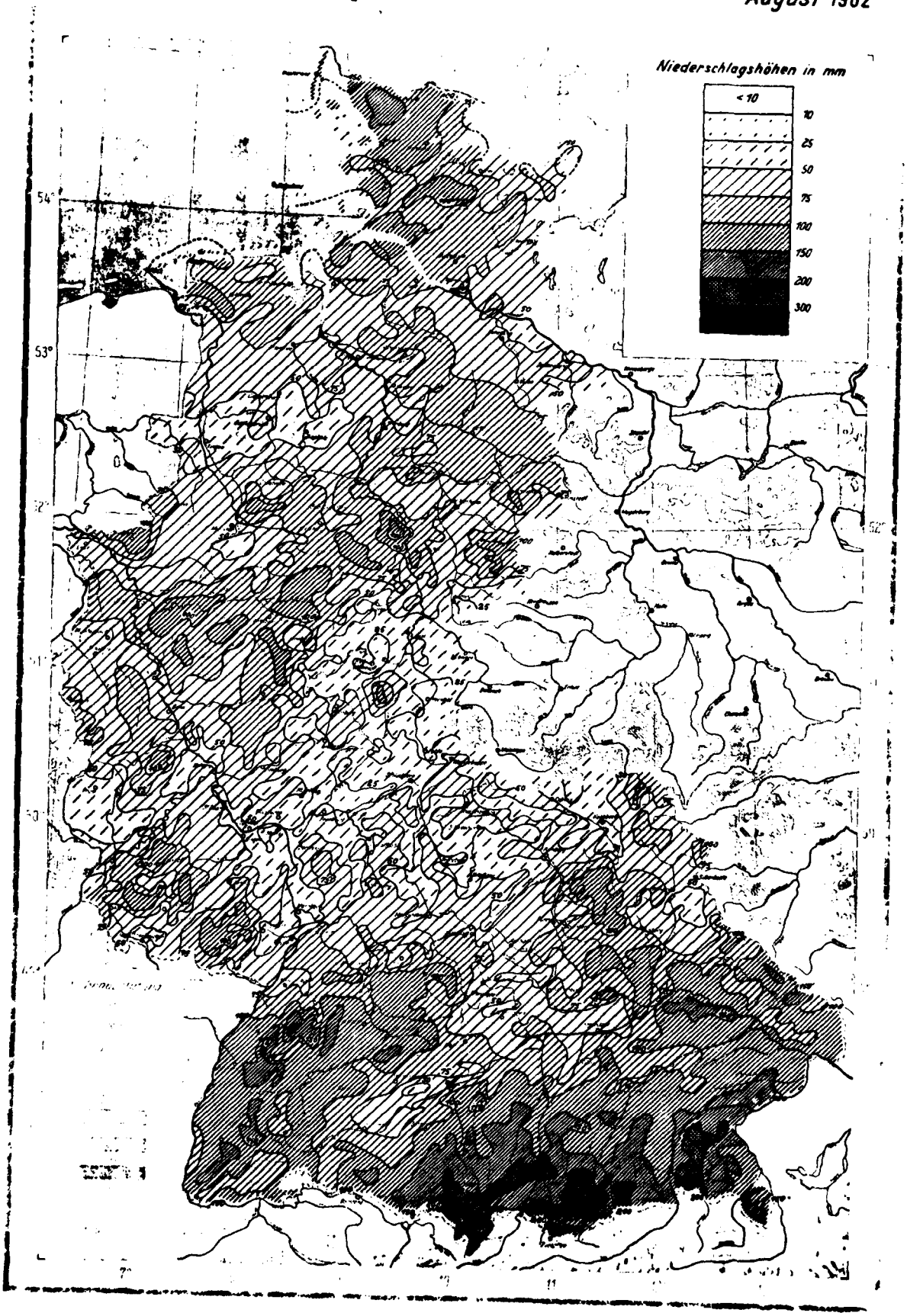
Juli 1982



BATTELLE-INSTITUT E.V. FRANKFURT AM MAIN

Verteilung der Niederschlagshöhen in mm

August 1982



Verteilung der Niederschlagshöhen in mm — September 1982

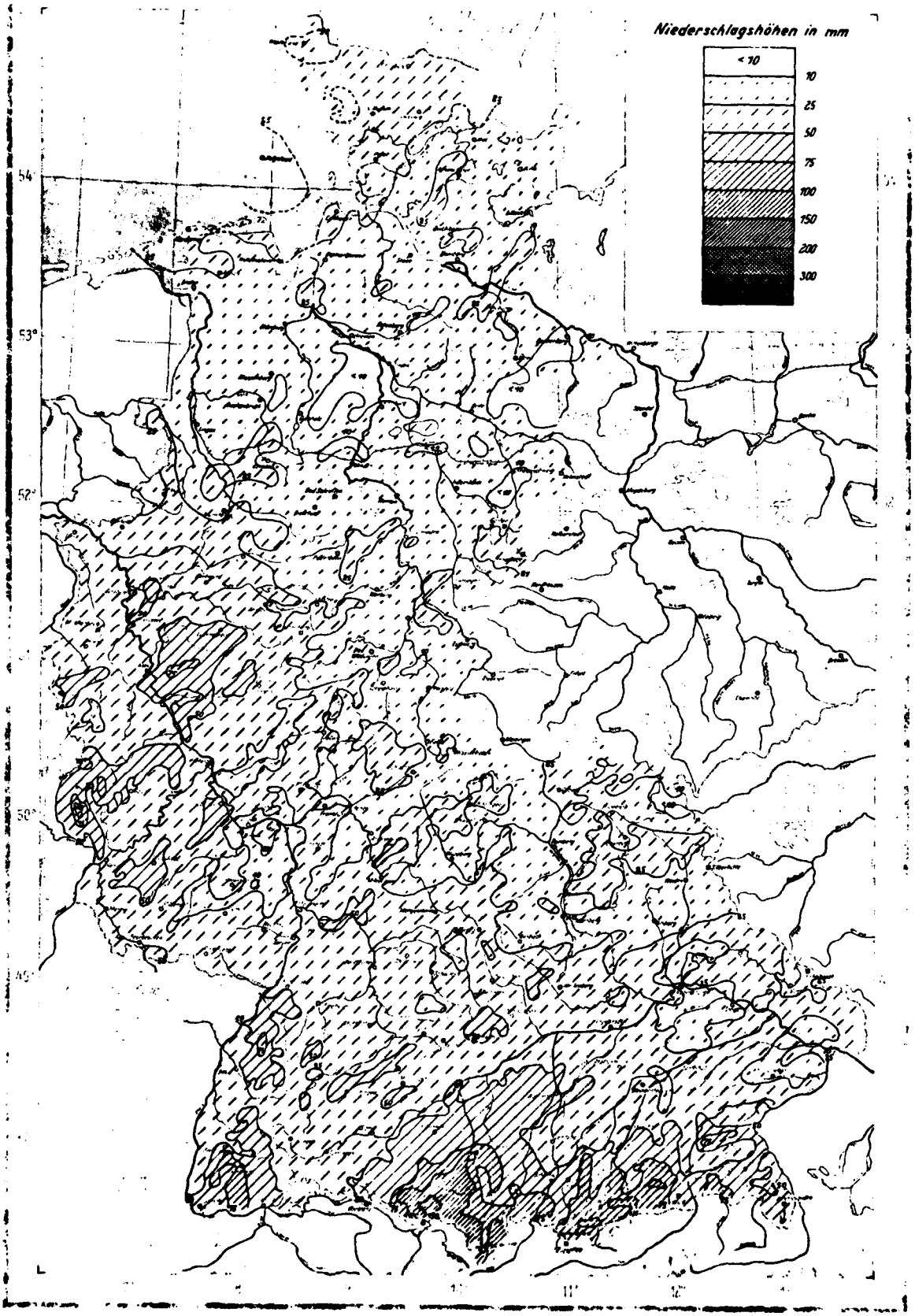
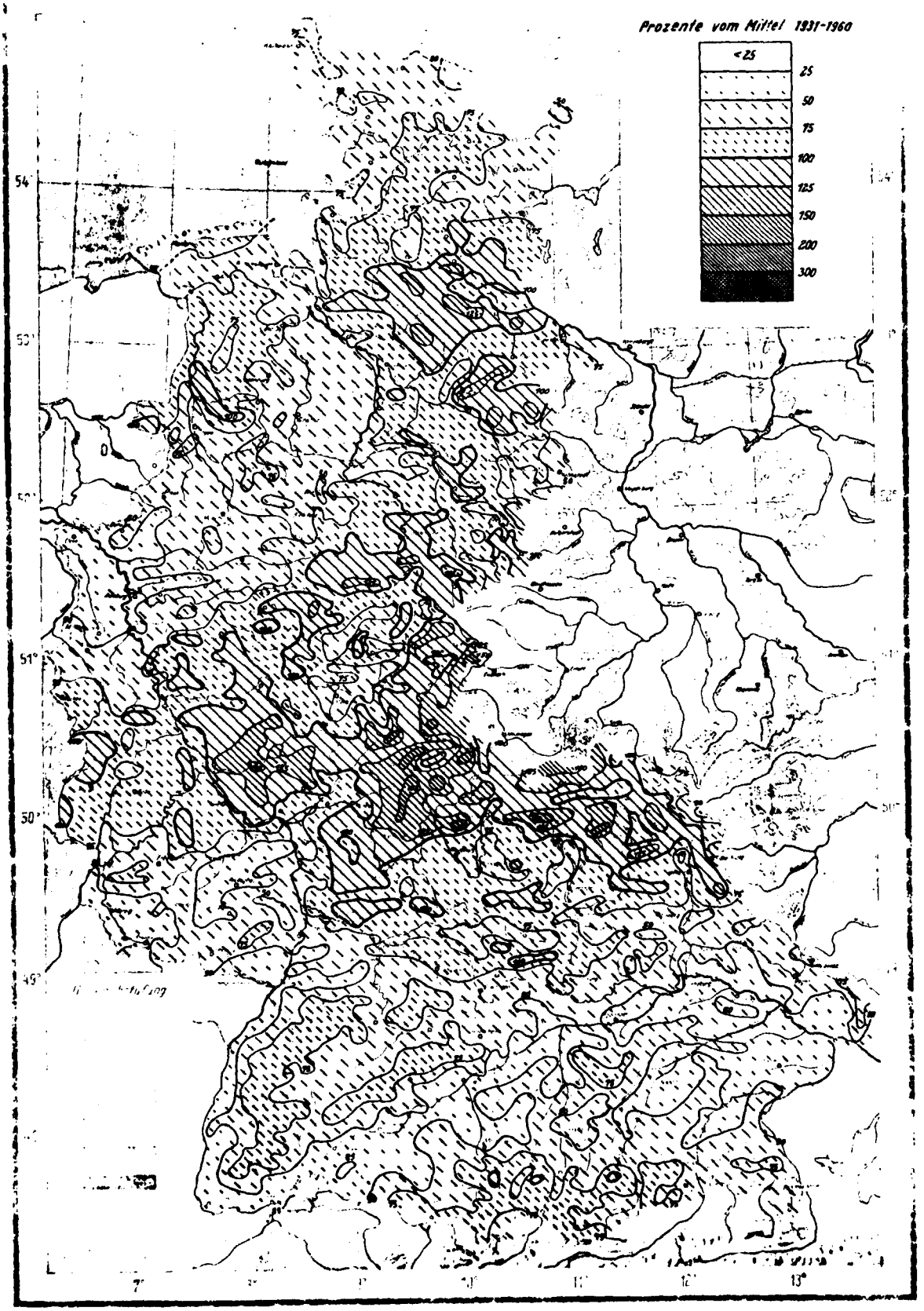


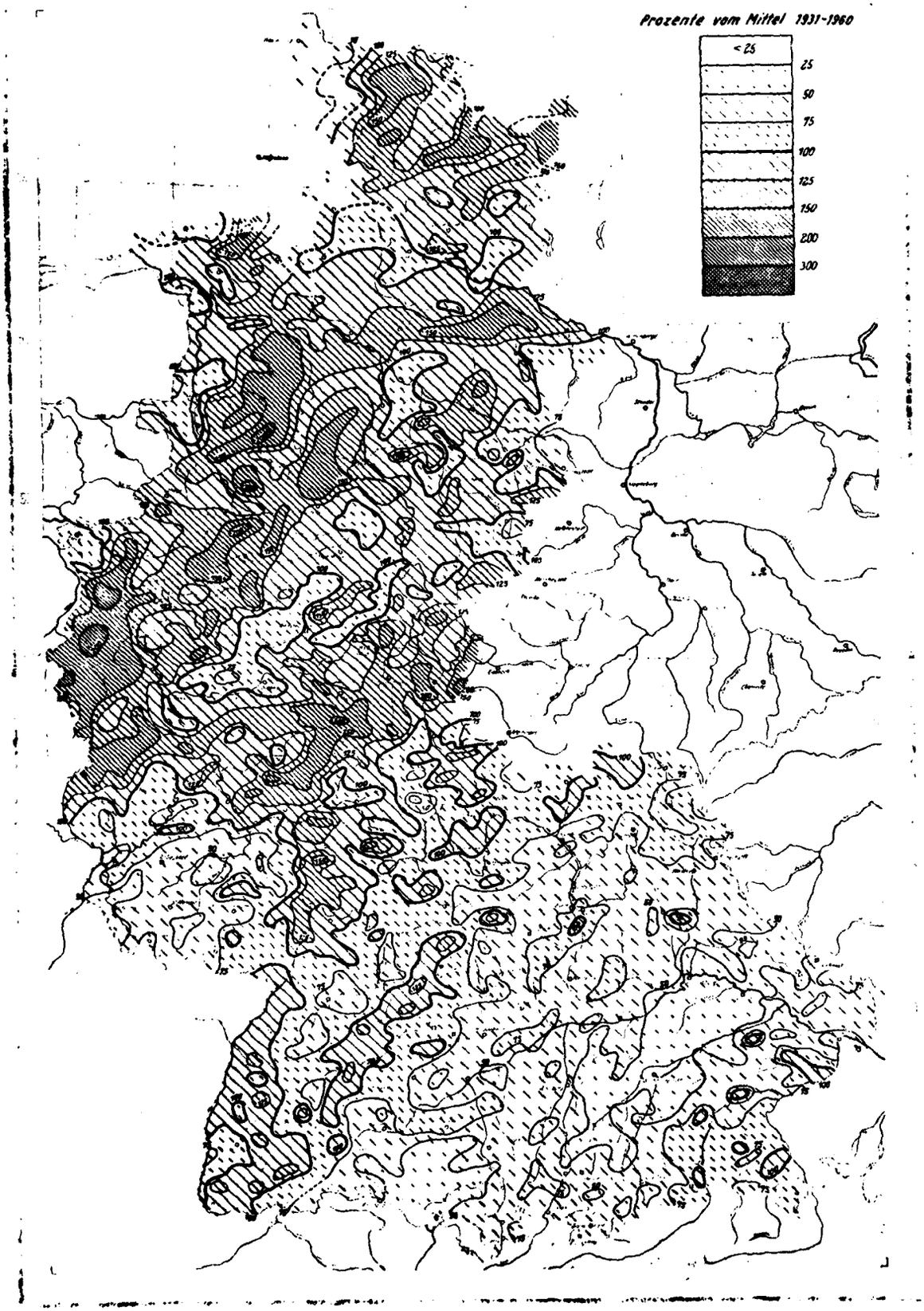
Table 1 ctd: Graphical Representation of Meteorological Data (precipitation in % of the 1931-1960 mean values)

April 1982

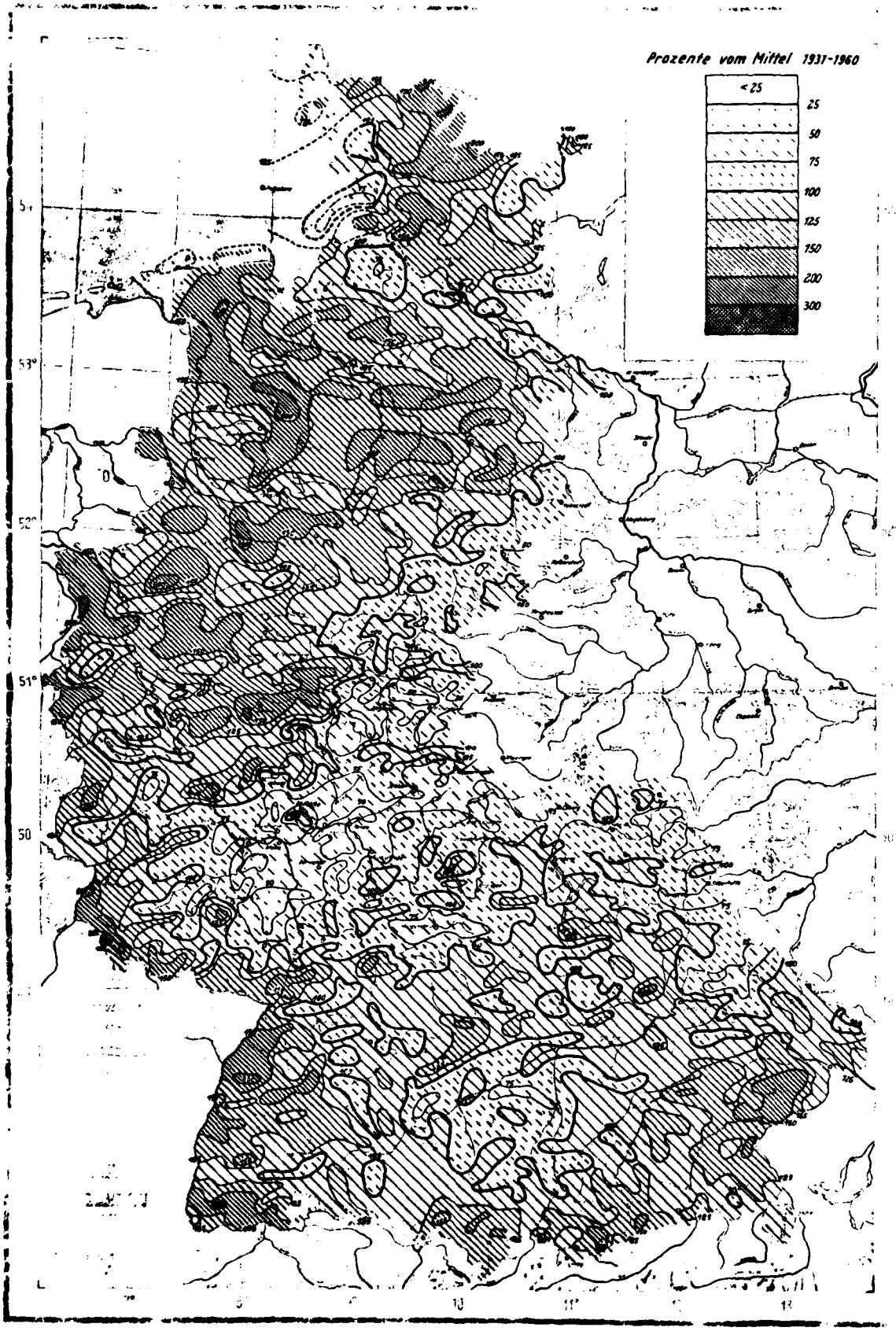


Verteilung der Niederschlagshöhen in %

Mai 1982

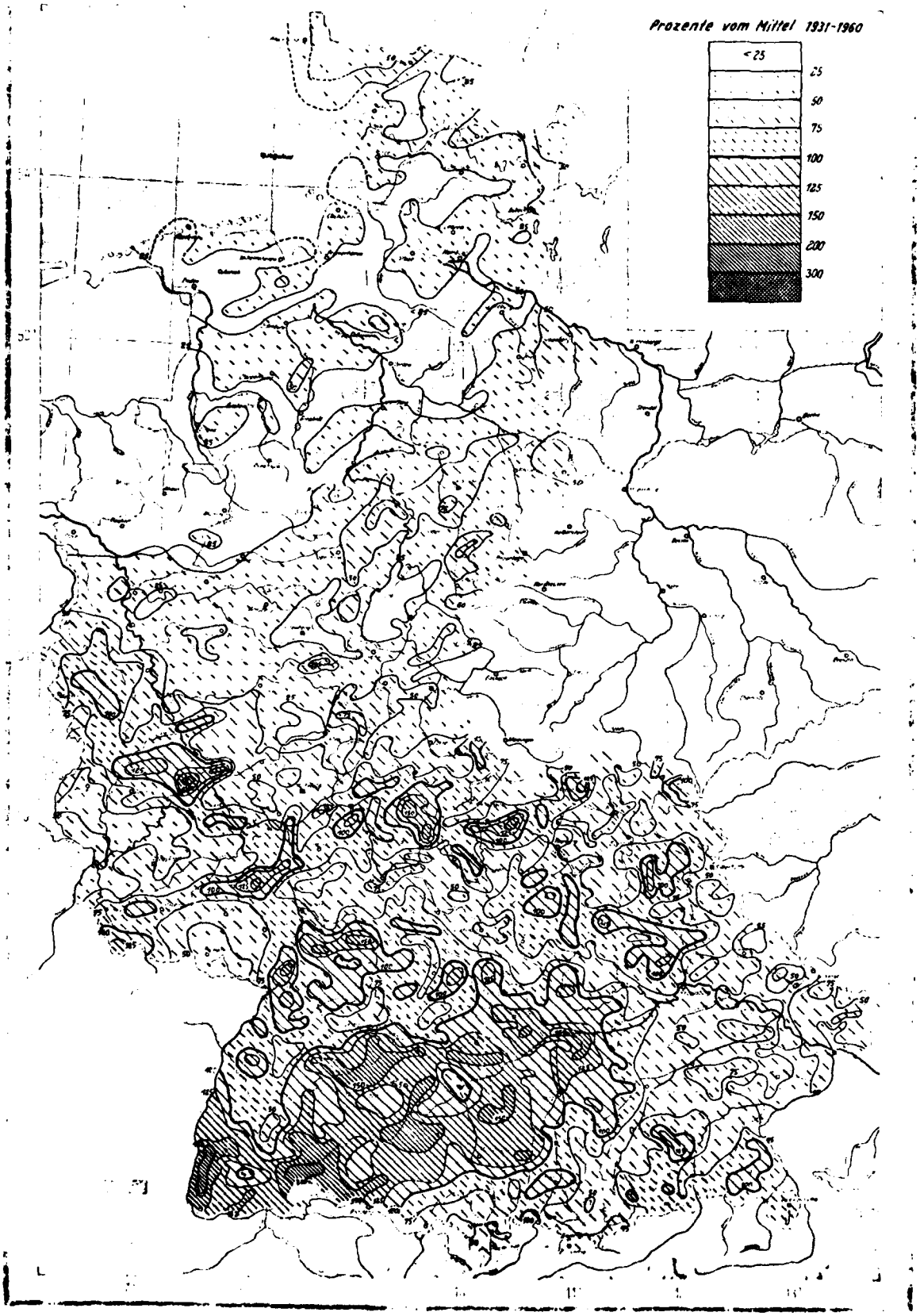


Verteilung der Niederschlagshöhen in % **Juni 1982**

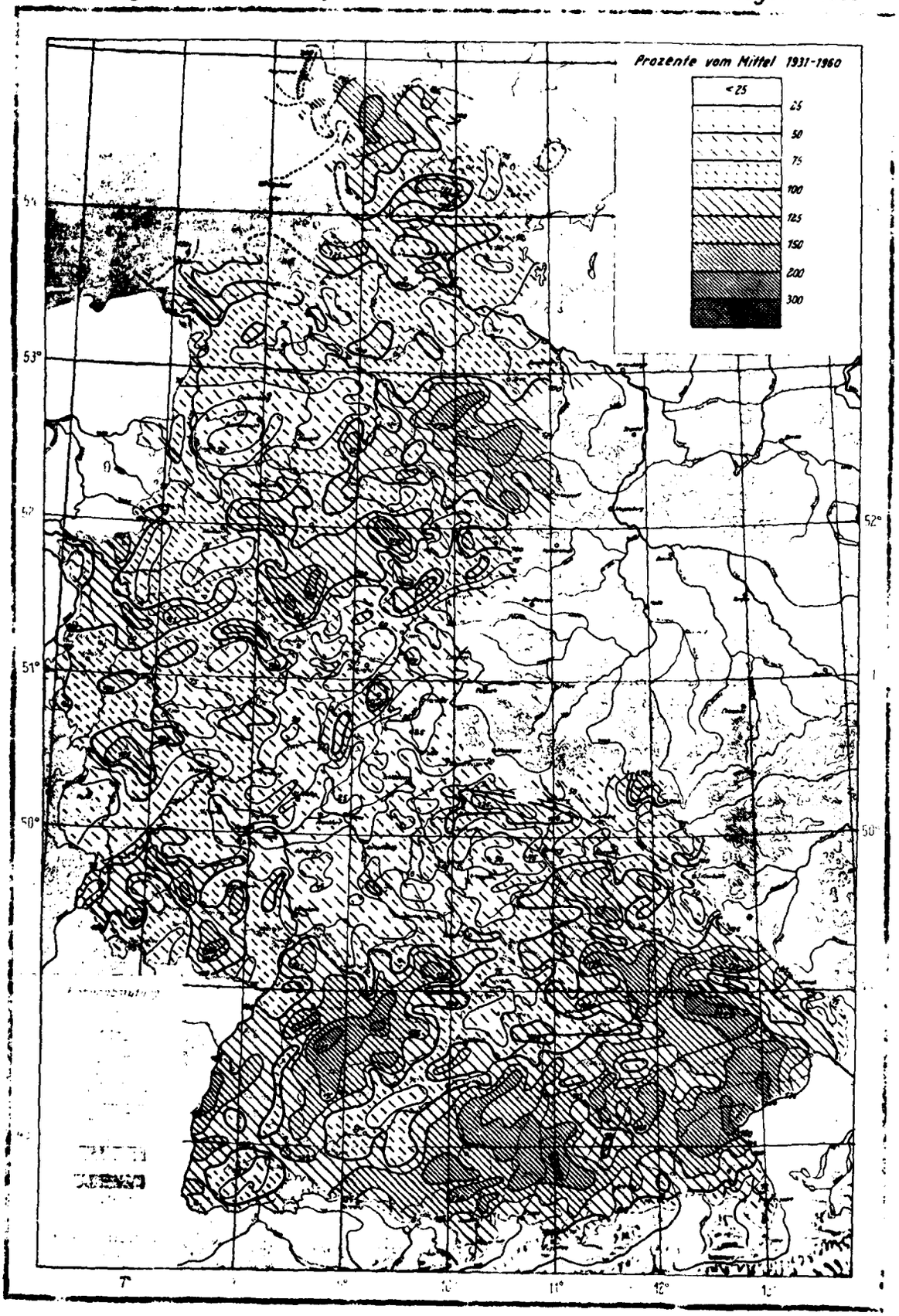


Verteilung der Niederschlagshöhen in %

Juli 1982



Verteilung der Niederschlagshöhen in % **August 1982**



Verteilung der Niederschlagshöhen in % *September 1982*

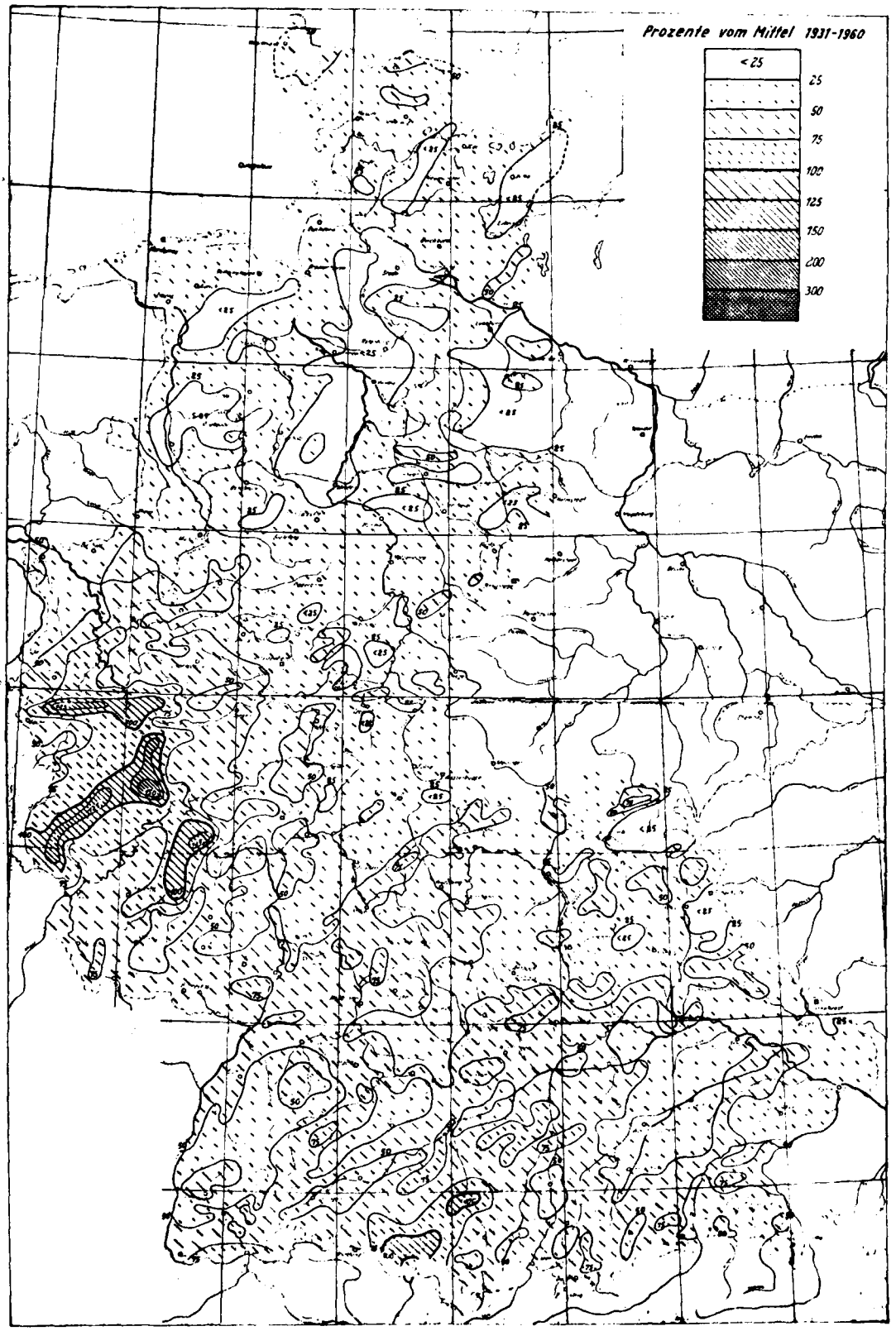


Table 2a: General Land-Use-Classification for the Darmstadt Area (Including Crop Types A and B, Height, and Crop Condition Classes)

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
1	Field trail	24	006	00	0
2	Harrowed	02	001	00	0
3	Freshly harrowed	04	001	00	0
4	Green fodder (rape), H=65cm	15	003	03	1
5	Plowed	01	001	00	0
6	Harrowed	02	001	00	0
7	Freshly harrowed	04	001	00	0
8	Road ditch	24	006	00	0
9	Field trail, asphalt-coated	24	006	00	0
10	Harrowed	02	001	00	0
11	Sugar beets, H= 40 cm	06	007	02	1
12	Harrowed	02	001	00	0
13	Cultivated stubble field	20	001	00	0
14	Freshly harrowed	04	001	00	0
15	Field trail	24	006	00	0
16	Plowed	01	001	00	0
17	Field trail	24	006	00	0
18	Plowed	01	001	00	0
19	Cultivated stubble field	20	001	00	0
20	Cultivated stubble field (rotary hoe)	20	001	00	0
21	Sugar beets, H = 40 cm	06	007	02	1
22	Turnips, H = 50 cm	08	008	02	1
23	Field trail	24	006	00	0
24	Freshly harrowed	04	001	00	0
25	Field trail, asphalt-coated	24	006	00	0
26	Freshly harrowed	04	001	00	0
27	Harrowed	02	001	00	0
28	Freshly harrowed	04	001	00	0
29	Harrowed	02	001	00	0
30	Field trail	24	006	00	0
31	Freshly harrowed	04	001	00	0
32	Harvested potatoes	11	002	00	0
33	Potatoes, H = 40 cm	10	009	02	1
34	Harrowed	02	001	00	0
35	White cabbage	14	011	01	1
36	Freshly harrowed, H = 20cm	04	001	00	0

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
37	Field trail, asphalt-coated	24	006	00	0
38	Harrowed	02	001	00	0
39	Field trail	24	006	00	0
40	Freshly plowed	03	001	00	0
41	Field trail	24	006	00	0
42	Ditch, scattered bushes	23	005	03	0
43	Sowed	05	001	00	0
44	Cultivated stubble field	20	001	00	0
45	Stubble field, H= 5 cm	19	002	01	0
46	Turnips, H = 50 cm	08	008	02	1
47	Sowed	05	001	00	0
48	Field trail, asphalt-coated	24	006	00	0
49	Stubble field, H = 5 cm	19	002	01	0
50	Harrowed	02	001	00	0
51	Sowed	05	001	00	0
52	Plowed	01	001	00	0
53	Field trail	24	006	00	0
54	Field trail	24	006	00	0
55	Ditch, water-filled	24	006	00	0
56	Corn field, H = 2 m	12	010	06	3
57	Stubble field, H = 5 cm	19	002	01	0
58	Piled straw, H = 2 m	24	006	06	0
59	Plowed	01	001	00	0
60	Harrowed	02	001	00	0
61	Field trail	24	006	00	0
62	Freshly plowed	03	001	00	0
63	Turnips, H = 50 cm	08	008	02	1
64	Harrowed	02	001	00	0
65	Idle land (flooded/spoilt turnip crop)	23	005	00	0
66	Ditch	24	006	00	0
67	Field trail, concrete-coated	24	006	00	0
68	Field trail	24	006	00	0
69	Plowed	01	001	00	0
70	Meadow, H = 20 cm	17	003	01	1
71	Cut green fodder, H=5 cm	16	003	01	0
72	Green fodder (rape), H=65 cm	15	003	03	1

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
73	Turnips, H = 50 cm	08	008	02	1
74	Plowed	01	001	00	0
75	Stubble field, H = 5 cm	19	002	01	0
76	Ditch	24	006	00	0
77	Cultivated stubble field	20	001	00	0
78	Field trail	24	006	00	0
79	Meadow/dam slope, H = 20 cm	17	003	01	1
80	Field trail	24	006	00	0
81	Sugar beets, H = 30 cm	06	007	01	1
82	Green fodder (rape), H = 65 cm	15	003	03	1
83	Cut green fodder, H = 5 cm	16	003	01	0
84	Green fodder (rape), H = 65 cm	15	003	03	1
85	Green fodder (rape), H = 65 cm	15	003	03	1
86	Corn, H = 2 m	12	010	06	3
87	Corn, H = 2 m	12	010	06	3
88	Cut corn field, H = 10 cm	13	002	01	0
89	Meadow, H = 20 cm	17	003	01	1
90	Forested bushes, deciduous H=40'-50' (alder trees, willows)	22	004	40/50	2
91	Harrowed	02	001	00	0
92	Plowed	01	001	00	0
93	Corn, H = 2 m	12	010	06	3
94	Field trail	24	006	00	0
95	Green fodder (rape), H = 65 cm	15	003	03	1
96	Harrowed	02	001	00	0
97	Ditch	24	006	00	0
98	Harrowed	02	001	00	0
99	Cut meadow, H = 5 cm	18	003	01	0
100	Plowed	01	001	00	0
101	Harrowed	02	001	00	0
102	Ditch, bushes/single trees	23	005	00	0
103	Field trail	24	006	00	0
104	Harrowed	02	001	00	0
105	Idle land, grass, H = 20 cm	23	003	01	0
106	Idle land, grass, H = 20 cm	23	003	01	0
107	Harrowed	02	001	00	0

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
108	Harrowed	02	001	00	0
109	Field trail	24	006	00	0
110	Sugar beets, H = 30 cm	06	007	01	1
111	Sowed	05	001	00	0
112	Plowed	01	001	00	0
113	Cultivated stubble field, H = 5 cm	20	001	00	0
114	Stubble field, H = 5 cm	19	002	01	0
115	Meadow, H = 20 cm	17	003	01	1
116	Plowed	01	001	00	0
117	Field trail	24	006	00	0
118	Harrowed	02	001	00	0
119	Stubble field, cultivated	20	001	00	0
120	Plowed	01	001	00	0
121	Plowed	01	001	00	0
122	Harrowed	02	001	00	0
123	Harrowed	02	001	00	0
124	Sowed	05	001	00	0
125	Meadow, H = 45 cm	17	003	02	1
126	Stubble field, cultivated	20	001	00	0
127	Harvested potatoes	11	002	00	0
128	Sowed	05	001	00	0
129	Sowed	05	001	00	0
130	Plowed	01	001	00	0
131	Sugar beets, H = 30 cm	06	007	01	1
132	Harrowed	02	001	00	0
133	Harrowed	02	001	00	0
134	Meadow, H = 20 cm	17	003	01	1
135	Idle land, grass/bushes H = 80 - 90 cm	23	005	03	0
136	Forest, deciduous, ash trees H = 90 - 95'	22	004	90/95	3
137	Special area, clearing	24	006	00	0
138	Forest trail	24	006	00	0
139	Young deciduous forest stand, H = 6'	22	004	06	3
140	Young deciduous forest stand, H = 4'	22	004	04	3
141	Harrowed	02	001	00	0

Table 2b: General Land-Use Classification for the Fulda Area (Including Crop Type A and B, Height, and Crop Condition Classes)

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
1	Harrowed	02	001	00	0
2	Field trail, asphalt-coated	24	006	00	0
3	Freshly harrowed	04	001	00	0
4	Harrowed	02	001	00	0
5	Field trail, metalled	24	006	00	0
6	Freshly harrowed	04	001	00	0
7	Harrowed	02	001	00	0
8	Freshly harrowed	04	001	00	0
9	Potatoes, H = 35 cm	10	009	02	1
10	Turnips, H = 45 cm	08	008	02	1
11	Plowed	01	001	00	0
12	Freshly plowed	03	001	00	0
13	Corn, H > 150 cm	12	010	06	1
14	Cut green fodder (lucerne, lupine) H =20 cm	16	003	01	0
15	Potatoes, H = 35 cm	10	009	02	1
16	Turnips, H = 45 cm	08	008	02	1
17	Corn stubble field, H=10cm	13	002	01	0
18	Corn, H > 150 cm	12	010	06	1
19	Freshly plowed	03	001	00	0
20	Harrowed	02	001	00	0
21	Potatoes, H = 35 cm	10	009	02	1
22	Turnips, H = 45 cm	08	008	02	1
23	Harrowed	02	001	00	0
24	Freshly harrowed	04	001	00	0
25	Field trail	24	006	00	0
26	Cultivated stubble field	20	001	00	0
27	Turnips, H = 45 cm	08	008	02	1
28	Stubble field	19	002	01	0
29	Cut meadow, H = 10 cm	18	003	01	0
30	Drainage ditch	24	006	00	0
31	Harrowed	02	001	00	0
32	Cut meadow, H = 10 cm	18	003	01	0
33	Meadow, H = 30 cm	17	003	01	1
34	Field trail, asphalt-coated	24	006	00	0
35	Field trail, metalled	24	006	00	0

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
36	Sowed	05	001	00	0
37	Cut meadow, H = 10 cm	18	003	01	0
38	Cut meadow, H = 10 cm	18	003	01	0
39	Meadow, H = 30 cm	17	003	01	1
40	Harrowed	02	001	00	0
41	Idle land, grass, H = 20 cm	23	003	01	0
42	Field trail, metalled	24	006	00	0
43	Field trail	24	006	00	0
44	Harvested Potatoes	11	002	00	0
45	Cut meadow, H = 10 cm	18	003	01	0
46	Cut meadow, H = 10 cm	18	003	01	0
47	Sowed	05	001	00	0
48	Harrowed	02	001	00	0
49	Idle land, grass, H = 20 cm	23	003	01	0
50	Sowed	05	001	00	0
51	Harrowed	02	001	00	0
52	Stubble field, H = 5 cm	19	002	01	0
53	Harrowed	02	001	00	0
54	Potatoes, H = 35 cm	10	009	02	1
55	Harrowed	02	001	00	0
56	Stubble field, H = 5 cm	19	002	01	0
57	Field trail	24	006	00	0
58	Meadow, H = 25 cm	17	003	01	1
59	Stubble field with drainages, H = 5 cm	19	002	01	0
60	Harrowed	02	001	00	0
61	Forest, deciduous (oak 80%, beech 20%), H = 60 cm	22	004	60	2
62	Meadow, H = 15 cm	17	003	01	1
63	Field trail	24	006	00	0
64	Corn, H = 180 cm	12	010	06	2
65	Corn stubble field, H=10cm	13	002	01	0
66	Meadow, H = 15 cm	17	003	01	1
67	Ditch	23	005	00	0
68	Secondary road, asphalt-coated	24	006	00	0
69	Plowed	01	001	00	0
70	Meadow, H = 15 cm	17	003	01	1

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
71	Cut green fodder, H = 5 cm	16	003	01	0
72	Meadow, H = 35 cm	17	003	02	1
73	Stubble field, H = 5 cm	19	002	01	0
74	Freshly plowed	03	001	00	0
75	Field trail, metalled	24	006	00	0
76	Field trail, asphalt-coated	24	006	00	0
77	Cut meadow, H = 5 cm	18	003	01	0
78	Former silo area	24	006	00	0
79	Silo, H = 2 m	24	006	06	0
80	Meadow, H = 25 cm	17	003	01	1
81	Meadow, H = 25 cm	17	003	01	1
82	Cut Meadow, H = 5 cm	18	003	01	0
83	Stubble field, H = 5 cm	19	002	01	0
84	Idle land, grass, H = 35 cm	23	003	02	0
85	Field trail with ditch	24	006	00	0
86	Cut meadow, H = 5 cm	18	003	01	0
87	Pasture, H = 20 cm	21	003	01	1
88	Railway dam slope, idle land, H = 20 cm	24	006	01	0
89	Pasture, H = 20 cm	21	003	01	1
90	Field trail	24	006	00	0
91	Cut meadow, H = 5 cm	18	003	01	0
92	Plowed	01	001	00	0
93	Meadow, H = 25 cm	17	003	01	1
94	Cut Meadow, H = 5 cm	18	003	01	0
95	Plowed	01	001	00	0
96	Stubble field, H = 5 cm	19	002	01	0
97	Harrowed	02	001	00	0
98	Field trail, metalled	24	006	00	0
99	Secondary road, asphalted	24	006	00	0
100	Coniferous forest stand, pines, H = 70'	22	004	70	1
101	Harrowed	02	001	00	0
102	Harrowed	02	001	00	0
103	Cut meadow, H = 5 cm	18	003	01	0
104	Harrowed	02	001	00	0
105	Turnips, H = 45 cm	08	008	02	1
106	Freshly harrowed	04	001	00	0

No.	General Land-Use/ Crop Type Description/ Height Estimates	Crop Type A Class	Crop Type B Class	Height Class	Crop Condition Class
107	Freshly plowed	03	001	00	0
108	Corn, H = 180 cm	12	010	06	2
109	Harrowed	02	001	00	0
110	Field trail	24	006	00	0
111	Shed, scattered trees, H = 17'	24	006	17	0
112	Plowed	01	001	00	0
113	Harrowed	02	001	00	0
114	Harrowed, spotted animal fertilizer	02	001	00	0
115	Cut meadow, H = 5 cm	18	003	01	0
116	Pasture, spotted animal fertilizer, H = 25 cm	21	003	01	1
117	Forest, deciduous, alder trees, H = 55'	22	004	55	2
118	Forest, coniferous, spruce H = 75'	22	004	75	2
119	Field trail	24	006	00	0
120	Meadow, H = 30 cm	17	003	01	1
121	Meadow, H = 30 cm	17	003	01	1
122	Cut meadow, H = 5 cm	18	003	01	0
123	Cut meadow, H = 5 cm	18	003	01	0
124	Harrowed	02	001	00	0
125	Harrowed, fertilized	02	001	00	0
126	Potatoes, H = 35 cm	10	009	02	1
127	Harvested potatoes	11	002	00	0
128	Cabbage, H = 20 cm	14	011	01	1
129	Harrowed	02	001	00	0
130	Turnips, H = 45 cm	08	008	02	1
131	Harvested turnips	09	002	00	0
132	Harrowed	02	001	00	0
133	Field trail, metalled	24	006	00	0
134	Field trail	24	006	00	0
135	Harrowed	02	001	00	0
136	Harrowed	02	001	00	0
137	Stubble field, H = 5 cm	19	002	01	0
138	Harrowed	02	001	00	0
139	Cultivated stubble field	20	001	00	0
140	Cultivated stubble field	20	001	00	0
141	Forest, coniferous, pines H = 27'	22	004	27	2

Table 3: Crop Type A Classification

Code No.	Crop Type
01	Plowed field
02	Harrowed field
03	Freshly plowed field
04	Freshly harrowed field
05	Sowed
06	Sugar beets
07	Harvested sugar beets
08	Turnips
09	Harvested turnips
10	Potatoes
11	Harvested potatoes
12	Corn
13	Harvested corn
14	White cabbage
15	Green fodder (rape); beef-raising crop
16	Cut green fodder (cut rape)
17	Meadow
18	Cut meadow
19	Stubble field
20	Cultivated stubble field
21	Pasture
22	Forest
23	Idle land
24	Special areas (trails, sheds, etc.)

Table 4: Crop Type B Classification

Code No.	Crop Type
001	Freshly cultivated soils, cultivated stubble fields
002	Harvested truck crops, stubble fields
003	Meadows (incl. recently cut ones), pastures, green fodder/rape (incl. recently cut ones)
004	Forest
005	Idle land
006	Special areas (roads, trails, railways, buildings, etc.)
007	Sugar beets
008	Turnips
009	Potatoes
010	Corn
011	White cabbage

Table 5: Crop/Vegetation Height

Code No.	Crop/Vegetation Height
00	No crop/vegetation
01	> 0 - 30 cm
02	> 30 - 60 cm
03	> 60 - 90 cm
04	> 90 - 120 cm
05	> 120 - 150 cm
06	> 150 cm

Table 6: Crop/Vegetation Condition

Code No.	Crop/Vegetation Condition
0	No crop/vegetation
1	Poor
2	Normal
3	Good

Table 7: Growth Heights of the Most Important Plants in Germany

		Growth Height (cm)											
		Jan.	Febr.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cereals	winter barley	-	-	-	10-15	20-40	40-100	100	-	-	-	-	-
	winter rye	-	-	-	10-15	20-45	45-120	120	-	-	-	-	-
	winter wheat	-	-	-	10-15	20-40	40-100	100	100	-	-	-	-
	summer barley	-	-	-	10	20-40	40- 90	90	90	-	-	-	-
	Oat	-	-	-	10	20-40	40- 90	90	90	-	-	-	-
Truck crops	sugar beets	-	-	-	10	10-30	30- 40	40	40	40	40	40	-
	potatoes	-	-	-	-	10	10- 30	30- 50	50	50	20-30	-	-
	rape	-	-	-	20	20-50	50-120	100	100	-	-	-	-
	corn	-	-	-	-	0-10	10- 60	60-100	100-200	200	200	-	-
Field fodder	turnips	-	-	-	10-15	15-50	50-60	60	60	60	-	-	-
	green fodder (incl. green dung)	-	-	-	-	-	-	-	0-10	10-30	20-30	20-30	-
Meadows, pastures	grasses (incl. herbs)	10	10	10	10	10-30	30-50	10-20	20-40	10	10	10	10

Table 8: Classification of Agricultural Areas for the Groß-Gerau and Fulda Districts

Lande use / District	Agricultural Area	Green Fodder/ Green Land	Cereals	Truck Crops	Forest	Miscell.
Groß-Gerau (incl. Darmstadt flight line area)	19494 ha	3472 ha	12074 ha	3189 ha	-	759 ha
	100 %	17.8 %	62.0 %	16.3 %		3.9 %
Fulda (incl. Fulda flight line area)	66030 ha	36710 ha	25723 ha	3163 ha	-	344 ha
	100 %	55.7 %	38.9 %	4.8 %		0.6 %

Table 9: Structure of the Agriculturally Used Areas in Germany

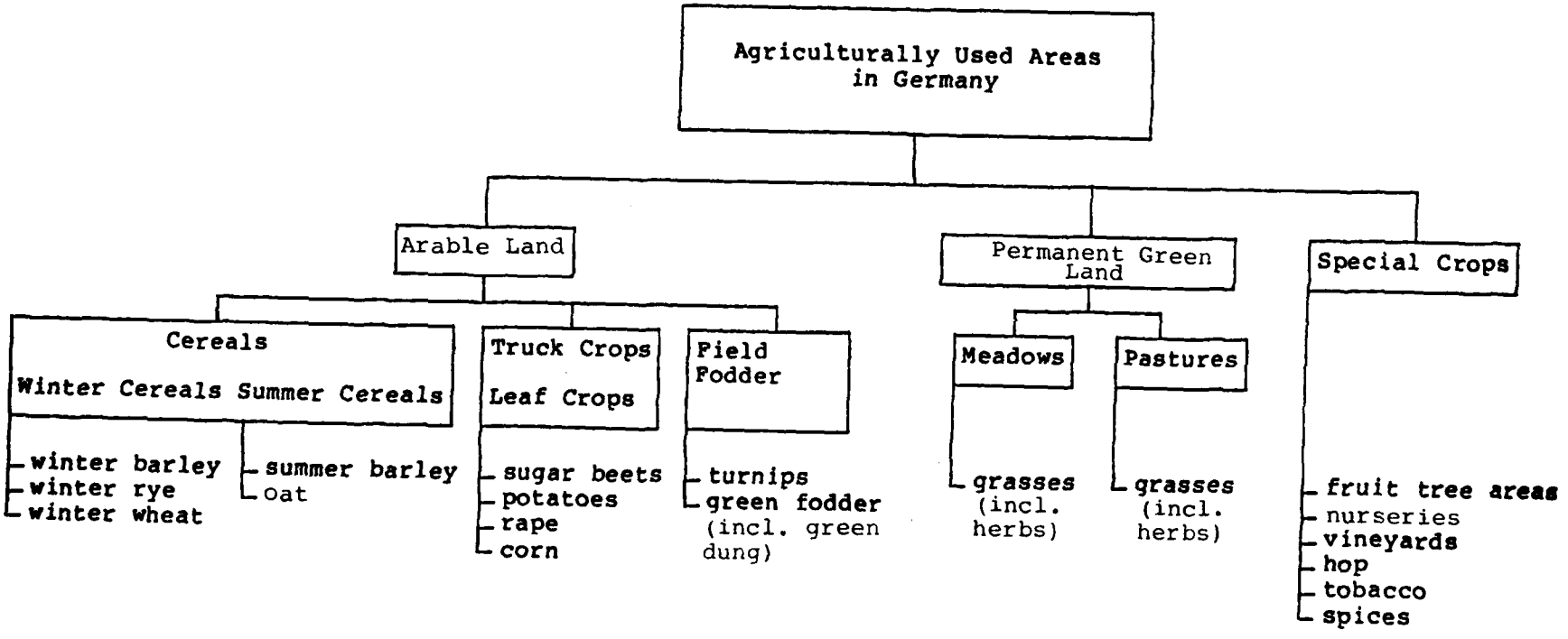
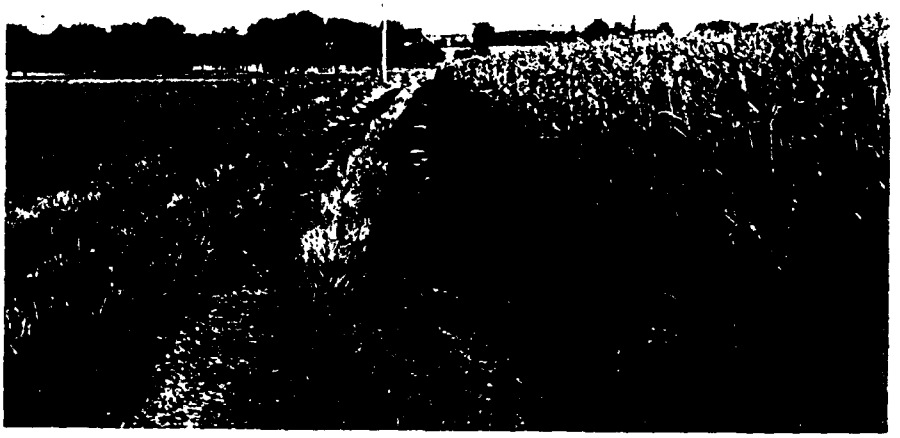


Table 10: Planting and Harvesting Dates for the Most Important Plants in Germany

Plant		Date of Planting	Date of Harvesting
Cereals	winter barley	September	July
	winter rye	October	August
	winter wheat	Oct./Nov.	August
	summer barley	March/April	August
	oats	March/April	August
Truck crops	sugar beets	March/April	Sept./Dec.
	potatoes	April	July/October
	winter rape	August	July
	summer rape	April	August
	corn	April/May	October
Field fodder	turnips	March/April	September
	green fodder	July/August	Oct./Nov.
	green dung	July/August	Oct./Dec. +)
Meadows, pastures	grasses (incl. herbs)	-	June + August

+) Harvesting means plowing here



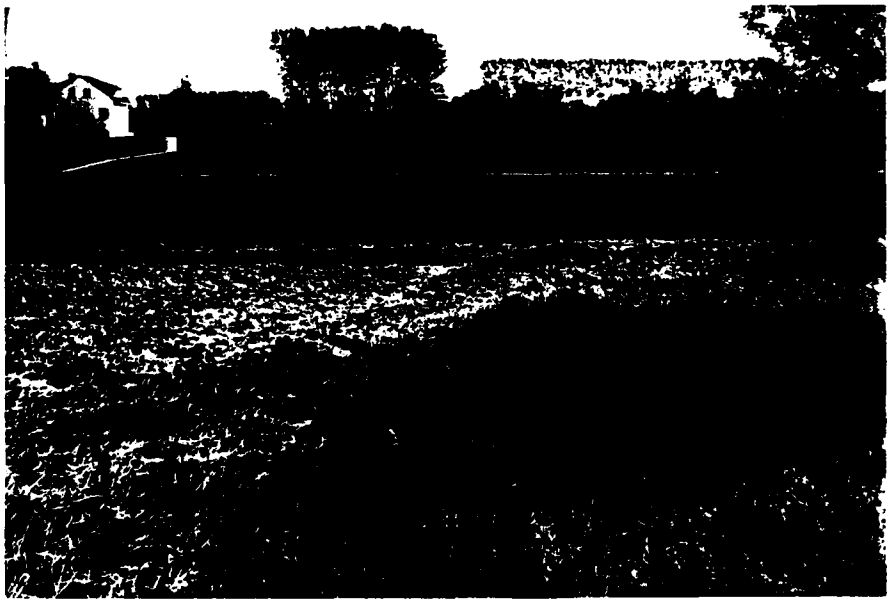
Photograph 1: Typical Corn Field Along Field Trail

Photograph 2: Barrel-shaped Turnip (Typical Growth Above Ground Level)

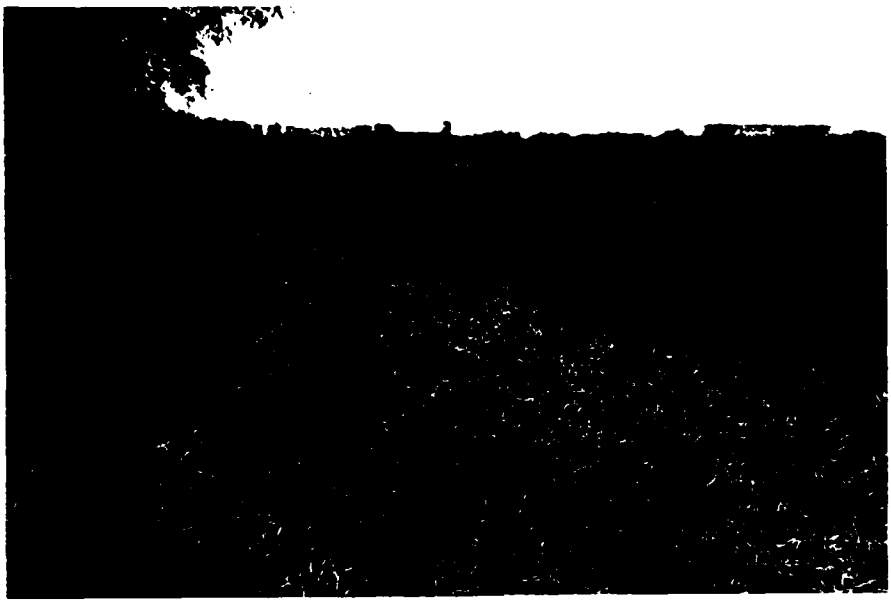
Photograph 3: Sugar Beet Field (Row-arranged) with Turnip Edges (Non-row-arranged)

Photograph 4: Rape Field

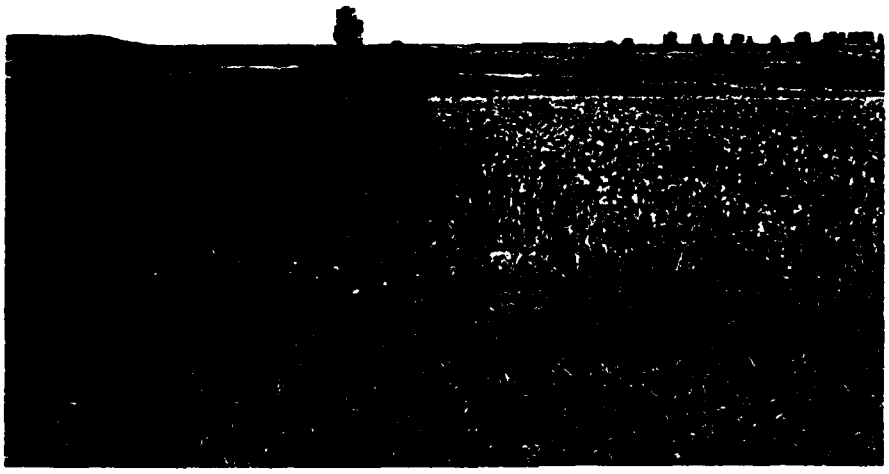
Photograph 5: Soil-Cultivation at Various Stages (Upper Right: Plow-harrowed area; Left: Plowed Area; Centre: Harrowing with Farm Implement)



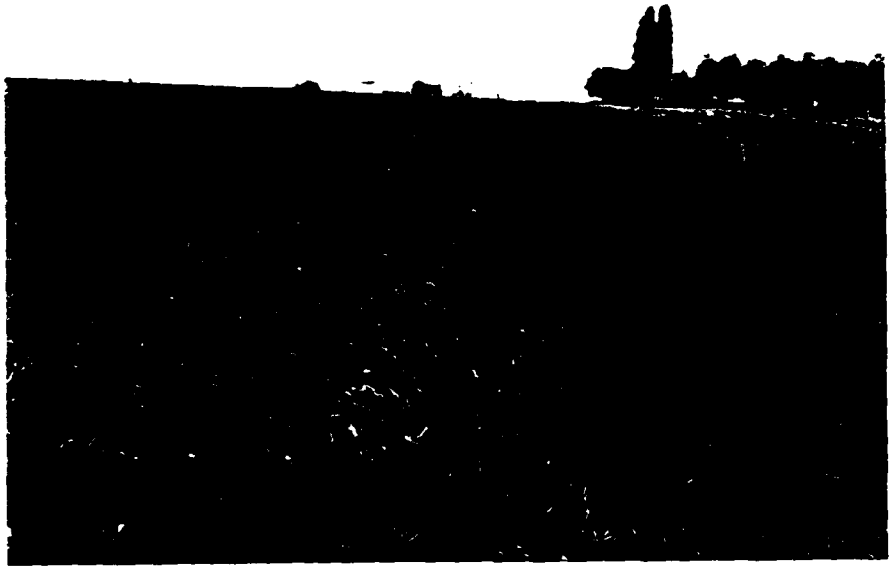
Photograph 6: Rotary-plowed Field (On the Left)



Photograph 7: Plow-harrowed Field (After Burning of Stubbles)



Photograph 8: Plow-harrowed Field

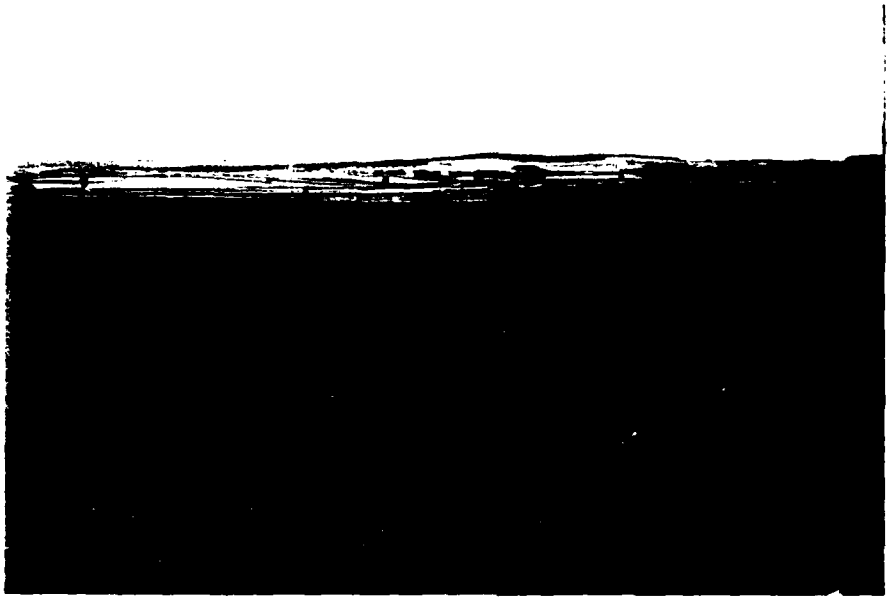


Photograph 9: Plowed (On the Left) and Harrowed Soil Condition

Photograph 10: Plow-harrowed Soil (On the Right) with Neighbouring Sugar Beet Field (On the Left)

Photograph 11: Plow-harrowed Soil Next to Potatoe and Sugar Beet Fields

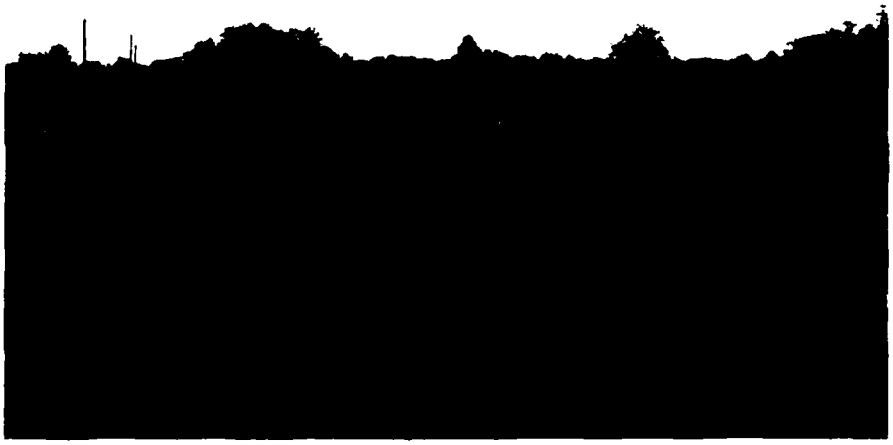
Photograph 12: Plow-harrowed Soil (Extremely Hard Surface Condition)



Photograph 13: Plow-harrowed Soil

Photograph 14: Plow-harrowed Soil

Photograph 15: Stubble Field (Left: Plow-harrowed After Burning; Centre: Condition Prior to Burning; Right: Condition After Burning)



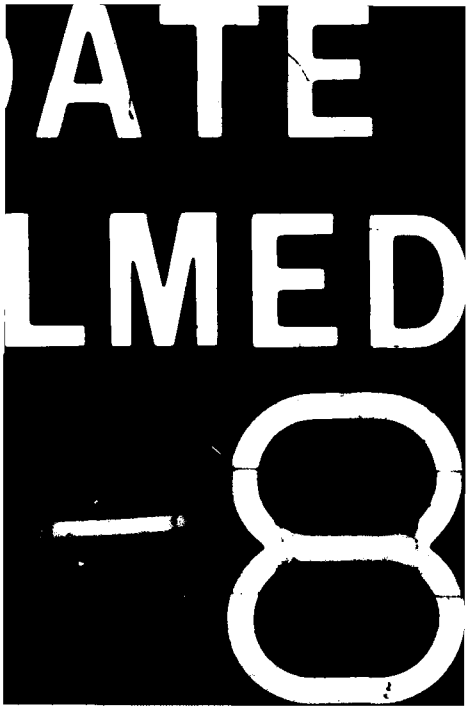
Photograph 16: Rotary-plowed Soil

Photograph 17: Shallow-plowed Soil (Left) with Neighbouring Sugar Beet Field

Photograph 18: Rape Field

Photograph 19: Sugar Beet Field with Turnip Edge (Right-hand Border)

Battelle-Institut e. V.
Am Römerhof 35
✉ 900160
6000 Frankfurt/M 90
☎ (0611) 7908(0)
Telex 04-11966


ATE
LMED
8